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UNIVERSITY OF LOUISIANA
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COMMERCIAL REVIEW

OF THE
SOUTH AND WEST.

A MONTHLY JOURNAL
OF TRADE, COMMERCE, COMMERCIAL POLITY, AGRICULTURE, MAN-
UFACTURES, INTERNAL IMPROVEMENTS, AND
GENERAL LITERATURE.

"Commerce is King."—CARLYLE.

CONDUCTED BY
J. D. B. DE BOW,
PROFESSOR OF POLITICAL ECONOMY, COMMERCE AND STATISTICS, IN THE UNIVERSITY
OF LOUISIANA, NEW-ORLEANS.

VOL. VI.

B. F. DE BOW, CAMP-STREET, NEW-ORLEANS.

C. S. FRANCIS & Co., New-York.	REDDING & Co., Boston.
GEO. OATES, Charleston.	DOLMAN, St. Louis.
M. BOULEMET, Mobile,	SIMMONDS & Co., London.

1848.

NEW-ORLEANS CHAMBER OF COMMERCE.

New-Orleans, May 4th, 1846.

Be it resolved, That this Chamber highly approves of the **COMMERCIAL REVIEW**, periodical established in this city by J. D. B. De Bow, Esq., and recommends it to the patronage of the commercial community.

SAMUEL J. PETERS, *President.*

CHARLES BRIGGS, *Secretary.*

SIR: I prefix a copy of a resolution, passed *unanimously* at a meeting of the Chamber of Commerce of this city, last evening.

Respectfully,

CHARLES BRIGGS, *Sec.*

To J. D. B. De Bow, Esq.

CHARLESTON CHAMBER OF COMMERCE.

Charleston, October 26th, 1846.

At a meeting of the Chamber, held this evening, the following resolutions were, after a few preparatory remarks, introduced by Col. J. Gadsden, and being seconded, were adopted by the Chamber.

Resolved, That the **COMMERCIAL REVIEW**, edited in New-Orleans by our fellow-citizen, J. D. B. De Bow, Esq., is a work well calculated to exercise a most favorable influence on the Commercial interests of the South and West.

Resolved, That the zeal and talent with which it has been commenced, and the able articles which have appeared in its pages (as foreshadowing on the future the promises of the past,) strongly recommend the *Review* to the patronage of the Southern community, and that the Chamber of Commerce of Charleston feel gratified at the opportunity of presenting to the public this testimony in its favor.

On motion of A. Moise, jr., Esq.,

Resolved, That a copy of these resolutions be forwarded to Mr. De Bow, and that they be published in the daily newspapers of the city.

Extract from the minutes.

WILLIAM B. HERRIOT, *Secretary.*

SOUTHERN RAILROAD CONVENTION.

Columbia, S. C., May, 1846.

On motion of A. G. Sumner, Esq.,

Resolved, That it is with pleasure we learn our late fellow-citizen, J. D. B. De Bow, Esq., now of New-Orleans, hereafter intends to devote a large portion of the **COMMERCIAL REVIEW** to the railroad interest in the South; we, therefore, heartily recommend that work to the patronage of those persons interested in such enterprises.

CHARLESTON MERCANTILE LIBRARY SOCIETY.

In exercise of the power given them by the Constitution, the Board have unanimously elected as Honorary Members, Freeman Hunt and J. D. B. De Bow, Esqrs. These gentlemen are entitled to wide and honorable distinction. The former in originating the **MERCHANTS' MAGAZINE**, the first successful attempt of its kind in the United States, sustained and conducted as it has been by marked ability. The latter one of our own citizens, in the laudable spirit which prompted the establishment of the **COMMERCIAL REVIEW** of the South and West, and the masterly pen which he has wielded in elucidation of the commercial interests of the South, have richly earned our most grateful acknowledgments.

A. O. ANDREWS, *Pres.*

February, 1847.

DE BOW'S COMMERCIAL REVIEW;

A MONTHLY JOURNAL OF TRADE, AGRICULTURE, COMMERCE,
COMMERCIAL POLITY, MANUFACTURES, INTERNAL IM-
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PROSPECTUS TO THE SEVENTH VOLUME.

This work has been regularly published nearly two years. Its success has been signal throughout the whole **SOUTHERN AND WESTERN COUNTRY**, and its subscription list steadily and rapidly increased there and in other sections of the Union. In this brief period it has gained a larger circulation than any other Southern work, and the strongest influence. Complimentary letters and notices have been received from every source, even the very highest, as could be shown did space permit. The **COMMERCIAL REVIEW** has advocated and upheld the

Commerce and Agriculture of the Southern and Western States,
and exhibited from time to time their complete

STATISTICS,

in such a manner as could not but have secured the best results. The papers which have appeared upon **SUGAR** and upon **COTTON**, upon **TORACCO** and **RICE**, and **MANUFACTURES**, upon **THE PROGRESS OF OUR COMMERCIAL RELATIONS** with all nations, and upon **MEXICO**, may be stated as examples. Indeed, this has been admitted from many sources. Although devoted in its aims to the development and exhibition of the

Resources of the South and West,

the Commercial Review neglects no view of

American and European Industry and Enterprise,

in every department, and must be of equal value to **AMERICAN CITIZENS** wherever they are found. Is there a section of the Union, too, or an interest, which has no concern with the progress and resources of the **GREAT WEST**, of which the **Commercial Review** is the faithful exponent?

COMMERCIAL REVIEW.

TESTIMONIALS.

If the Index of Contents, now published, were not sufficient evidence of what the work has been and is, we might remark, that it has been highly commended to us, among others, by the Hon. Henry Clay, Hon. J. C. Calhoun, Hon. J. Q. Adams, Hon. Levi Woodbury, Hon. E. Burke, Patent office, Hon. Abbot Lawrence, Hon. Joel R. Poinsett, the most important Chambers of Commerce, etc., etc. A host of letters might be easily published, and notices from Journals of the highest character; as the *Union* and *National Intelligencer*, *Courier and Enquirer*, *Charleston Courier*, *Mercury*, *Patriot* and *News*, *New-York Courier and Enquirer*; all the New-Orleans papers, and others throughout the country—*Skinner's Farmers' Library*, *Hunt's Merchants' Magazine*, *Simmond's London Colonial Review*, etc., etc.

IMPROVEMENTS FOR THE SEVENTH VOLUME.

At the opening of a SEVENTH VOLUME, it is well to state, that there are many great and important improvements now in course of preparation, which must add greatly to the interest and value of the Review, some of which this number will evidence.

1. Regular monthly *Summaries of American Commerce* will be prepared by one of the ablest writers upon such subjects in the Union.

2. A similar *European Correspondence* is secured, and publications will be made.

3. No pains has been spared to obtain the pens of the ablest *American writers* for the work.

4. A series of papers will be published, beginning with the present number, and extending through one or two years, from the pen of the editor and other collaborators upon

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A regular series will also be published upon *Silk*, *Wool*, *Hemp*, and similar subjects of agriculture and manufactures. The first of the series having appeared in our May Number upon *SILK*, being an elaborate and valuable paper, full even to details, from an able and practical pen, aided by all the statistics of the Patent office, and illustrated with numerous wood-cuts. This Treatise is invaluable.

5. A Department of *American MERCANTILE BIOGRAPHY* will be embraced, of leading characters taken from the *MERCHANT CLASSES* in every section of the Union, embellished with *STEEL ENGRAVINGS*, a feature first introduced by us in this country. These, in addition to the engravings we have already published, and *wood-cuts*, greatly increase the expense of publication. *Maps*, etc., will, if possible, be introduced.

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8. The work will be issued regularly on the first of each month, and furnished to subscribers without delay, and in the most secure manner; great improvements having taken place in the arrangement of our office.

The subscription price will be unchanged, but the greatest promptness in payments will be required from subscribers. We beg each of them to make use of this paper in acting as our friendly agent to increase the circulation. We would be glad to present our work without charge, for one year, to any one who would procure three permanent subscribers, and forward us the money in advance.

We have kept our promises in the past, as the *Commercial Review* will evince, and shall keep them in future.

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THE COMMERCIAL REVIEW

OF THE
SOUTH AND WEST.

ESTABLISHED JANUARY 1, 1846.

J. D. B. DE BOW, EDITOR AND PUBLISHER.

Volume VI.

JULY, 1848.

No. 1.

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Volume VI.

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No. 1.

Art. I.—THE SOUTH AMERICAN STATES.

HISTORICAL PROGRESS OF SOUTH AMERICA—REVOLUTIONS—SPANISH COLONIAL POLICY—DECLARATION OF INDEPENDENCE—REPORTS OF U. S. COMMISSIONERS UPON SOUTH AMERICA—MR. POINSETT'S VIEWS—SOUTH AND NORTH AMERICAN CHARACTER CONTRASTED—**ARAUCANIA—ARGENTINE REPUBLIC—BOLIVIA—BRAZIL—CHILI—COLOMBIA—ECUADOR—GRANADA—VENEZUELA—PARAGUAY—PERU—URUGUAY—PATAGONIA, ETC.**

WE have had occasion before, to pass under review the historical and statistical progress of the United States, and of those contiguous islands which remain still in the possession of foreign powers, but which it is not too great a stretch of probability to suppose, may ultimately be attached to the government of these states.* Our intention is to prosecute these investigations in regard to every other division of America, and furnish the reader as late, as reliable, and as thorough information upon them, as can be had from any or from all sources together. It is important that we, who occupy so large a portion of it, and are so intimately and closely connected with the rest, should know well and minutely everything that concerns or is likely to affect the interests of this western world. It is a theatre, far removed from all the old limits of civilization, upon which a new and somewhat different people are called upon to perform their parts, amid circumstances and influences widely different from those of nations with whom they are most nearly allied. The history of this population, in all its different manifestations, is as unique as it is interesting, and furnishes materials for additional chapters in the history of man, of society, and of human progress.

The cold and inhospitable regions of the north, which are known as **BRITISH AMERICA**; and those which, amid mountains of ice, slope away to the Pacific and to the **ASIATIC POSSESSIONS OF RUSSIA**; the intermediate and but lately well explored divisions of **CENTRAL AMERICA** and **MEXICO**, and the vast **SEMI-CONTINENT**, stretching from the

* Vide **COMMERCIAL REVIEW**, vol. ii.: Art. *Progress of American Commerce*; vol. iv.: *Progress of the Great West*; vol. v.: *The West India Islands*. These are all elaborate papers.

Equator to the South Seas, will furnish abundant fields for investigation in this and succeeding numbers of the Review.

However important the subjects here announced, it must be said, with great regret, that they have hitherto commanded a degree of interest with our countrymen altogether disproportioned to that importance. We have been pleased to know the states of our own confederation, and even that imperfectly, whilst, as to all the remaining portions of America, they have constituted a far more perfect *terra incognita* than those of a fabulous antiquity. The ancient resources of Greece and Rome, and the modern European states, are far more familiarly known and assiduously studied. To be sure, the difficulties of obtaining reliable information in the one case, have been far greater than in the other. From vain jealousies, indifference or indolence, it happens that little has been given to the world calculated to show, in any adequate manner, the true condition and statistical progress or decadence of these divisions of the Western World. Of their discovery, and of the adventurous spirits who found an arena for the highest romance, there has been no dearth of knowledge. Every one can speak of Cortez and Pizarro. Even travellers, who, in general, do so much in extending information of the countries visited, aid us little here. Books have not multiplied upon these points. In fact, we know of scarcely any sufficiently elaborate and reliable for all the purposes desired. However, a thirst for knowledge has been excited by the contests about Oregon and the wars in Mexico, which will eventually result, we doubt not, in the most complete and perfect developments.

On this occasion, we shall confine our attention entirely to **SOUTH AMERICA**, a text sufficiently comprehensive for much greater space than that to which we find ourselves necessarily restricted.

The discovery and early settlement of this vast region, whilst it presents little in common with the discovery and settlement of the country to the northward by other European powers, excepting Florida and Mexico, furnishes one of the most romantic and thrilling chapters in the history of mankind:—Valor, endurance, intrepidity in the most trying and terrible exigencies, induced by the basest considerations of rapacity and plunder!—the loftiest spirit, and the most criminal and groveling desires. Not all the attractions of poetry or of chivalry can veil the deformities of a picture in which avarice, blood and slaughter, command so prominent a place. No cruelty could be more refined; no tyranny more systematic and heartless.

The Spaniards profited by the feuds existing among the natives at the period of discovery, and made them the instruments of conquest. They sold the Indians into slavery, and destroyed thousands by the harshest abuse. On the suggestion of Las Casas, commissioners were sent from Madrid to inquire into these abuses, and several regulations were made for their protection, and for the distribution of their labors. These established a less odious but yet perfect system of slavery.

Thousands of these unfortunate people, says the Hon. Joel R. Poinsett, in a paper prepared by him, in 1818, at the request of the

government of Mr. Monroe, were marched every year to Potosi; and although the period of service was only eighteen months, they were attended by a numerous train of friends and relations, who, on the eve of their entering the mines, sang melancholy dirges, and sounding a horn in solemn strains, mourned over them with all the ceremonies with which they used to evince their sorrow on the death of a relative. Their wives and children remained with the conscripts, who, harrassed by a long march, seldom resisted more than a year the excessive labor and noxious air of the mines.

But with this period we will not long delay, since the reader has been for some time in possession of the valuable works of Mr. Prescott, which entirely exhaust the subject.

Our observations upon South America begin at a period much more modern, and will be brought down as nearly as possible to the present day. They include all the states and provinces, except those of French, English and Dutch Guiana, already considered in our last number. The contrast furnished by the picture, when viewed in connection with that we have previously submitted, of the United States of North America, is the most striking and instructive.

In the year 1818, the question of South American affairs was brought before Congress by Mr. Monroe, who submitted the correspondence between Mr. Adams and Mr. Aguirre, the agent of the Government of La Plata, in regard to acknowledging the independence of that republic, then in actual revolution against the Spanish authorities.

The papers which were submitted on that interesting occasion, embrace the diplomatic correspondence, the able letter of Mr. Poinsett, and the elaborate returns of a commission, consisting of Messrs. Rodney, Graham and Bland, who were sent on a special embassy to South America, in order to learn the true state of affairs and condition of the country. These, with the able speeches of that liberal and enlightened statesman, Henry Clay, upon the same subject, are upon the table before us. For later information, we are indebted to the Digest of American Statistics, which, with little system, but great labor, the Hon. John McGregor, of London, has lately made and published.

Up to the period of the Revolution of 1790, in France, South America submitted quietly to its European governors in every particular, however arbitrary the exactions or revolting the principles of government. A hope of liberty would have seemed visionary and absurd in so grinding a despotism. Force and fear, and a sense of weakness and dependence, suppressed every other feeling than that of passive endurance.

Two viceroys were set up by the Spaniards over their American possessions; the *Viceroy of Mexico* and the *Viceroy of Peru*, under whose jurisdiction all things were placed. To these were added, in 1718, the *Viceroyalty of Santa Fé de Bogota*; in 1731, the *Captain Generalship of Caraccas*; in 1768, the *Captain Generalship of Chili*; in 1778, the *Viceroyalty of Buenos Ayres*.

In 1797, disturbances began to occur in Venezuela, induced by the spread of French revolutionary principles. They were succeeded, in the early part of the next century, by the attack of the British army,

under General Whitlocke, during the English and Spanish war, most gallantly repulsed by the South Americans, who, in this feat of arms and valor, seem for the first time to have been taught their true strength and importance. Such a lesson was not likely to be lost.

When Charles IV. and Ferdinand VII. of Spain renounced authority in favor of the brother of Napoleon, the act was met with loud protestations in the colonies. Neglected by the mother country in the pressing difficulties which surrounded her, and conceiving themselves abandoned entirely, a *Junta* was established in Buenos Ayres, in 1810, which assumed, in its own hands, the reins of government. In 1815, a Congress, at Tucuman, and afterwards in Buenos Ayres, was employed in framing a republican constitution. A declaration of independence was signed on the 9th July, 1816, and soon after followed by a similar declaration from Chili.

We are, however, anticipating, and return to a detail of those facts which minutely mark the progress of the revolution. In the first republican government of Buenos Ayres, the executive and legislative powers were vested in the Deputies; afterwards in an Assembly of Deputies from all the chief towns. This assembly having vested its executive powers in a Junta of three, which took the title of the Superior Provisional Government of the United Provinces of the River of the La Plata, in the name of Ferdinand VII., and after dissolving several assemblies, were finally abolished themselves, and a supreme director chosen, with regal powers.

The capital and provinces maintained a continual struggle, in which the former preserved the supremacy. Paraguay established an independent government, consisting of a Senate and two Consuls. The eastern shore of the La Plata, comprising the *Banda Oriental*, or Montevideo, refused its adhesion to the capital, and resisted by force of arms. They asserted an independence of Buenos Ayres as well as of Spain. The people of Peru took no active part in the revolution, from causes growing out of the organization, etc. of that province. The power of the church in Chili and its opposition to the revolution, as well as the factions between the powerful families of the Carreras and Larrains, are stated, by Mr. Poinsett, as having been unfavorable to the establishment of independence.

The South American colonies were an object of great interest with Great Britain from a very early period. Their emancipation was a favored project with Mr. Pitt, and proposals are said to have been made by him to the administration of John Adams upon the subject. The first outbreak at Caraccas was encouraged by a proclamation from Trinidad. The expedition of Miranda, and the occupation of Buenos Ayres, in 1806, by Sir Home Popham, were countenanced by the British government. Emboldened by their success, the British now determined upon the entire conquest of South America, as is evinced in the instructions given to Generals Whitlocke and Crawford, whose expedition sailed immediately after, and was repulsed, as we have seen. The expedition of General Whitlocke, says Mr. Poinsett, might have secured the emancipation of these colonies, but was not adequate to transfer the dominions to the crown of Great Britain.

After the downfall of the Spanish throne, manifestoes were published by the Princess Charlotte of Portugal, and the infant Don Pedro, claiming the Spanish American dominions. The first scheme of revolution was founded upon this pretension, and the delivery of the country to the Princess Charlotte, it was thought, would have been soon followed by its absolute independence. The matter, however, made but little progress.

We have already seen the formation of the Junta, and subsequent revolutionary governments. Years of anarchy and blood were destined to result to the almost irretrievable ruin of the colonies. The monarchial and patriot party, in their dissensions, added no little to the fearful disorders of the times. Civil wars raged between the different sections with various success and carnage. Portuguese and Spanish armies ravaged the country. Everything at times seemed hopeless for the republican cause. The Spanish yoke seemed but too likely to be imposed again. Almost any government would have been a blessing.

Remarking upon this dark chapter, Mr. Poinsett continues:—"Their dissensions and ambition render them, in the opinion of some, unworthy to be free; but let us recollect that the virtues that adorn society and brighten the page of history, are the offspring of freedom and science, and that when a people have been for centuries kept in subjection by ignorance and superstition, the first effort to burst their fetters will call into action the most violent of the human passions, and hurry men to commit the greatest excesses. The course of such a revolution will be too often stained by cruelties and crimes, and will almost inevitably terminate in a military despotism."

"In contemplating," said the Hon. Henry Clay, in his noble speech in the House of Representatives in 1818, on the appointment of a minister to the La Plata, "in contemplating the great struggle in which Spanish America is now engaged, our attention is first fixed by the immensity and character of the country which Spain seeks again to subjugate. Stretching on the Pacific Ocean from about the fortieth degree of north latitude to about the fifty-ninth degree of south latitude, and extending from the mouth of the Rio del Norte (exclusive of East Florida) around the Gulf of Mexico, and along the South Atlantic to near Cape Horn; it is about five thousand miles in length, and in some places near three thousand in breadth. Within this vast region we behold the most sublime and interesting objects of creation; the loftiest mountains, the most majestic rivers in the world; the richest mines of the precious metals, and the choicest productions of the earth. We behold there a spectacle still more interesting and sublime—the glorious spectacle of eighteen millions of people, struggling to burst their chains and to be free. When we take a little nearer and more detailed view, we perceive that nature has, as it were, ordained that this people and this country shall ultimately constitute several different nations. Leaving the United States on the north, we come to New Spain, or the vice-royalty of Mexico on the south; passing by Guatemala, we reach the vice-royalty of New Granada, the late Captain-Generalship of Venezuela and Guiana, lying on the east side of the Andes. Stepping over the Brazils we arrive at the United Provinces of La Plata, and crossing the Andes, we find Chili on their west side, and further north, the vice-royalty of Lima or Peru. Each of these several parts is sufficient in itself, in point of limits, to constitute a powerful state; and in point of population, that which has the smallest, contains enough to make it respectable. Throughout all the extent of that great portion of the world, which I have attempted thus hastily to describe, the spirit of revolt against the dominion of Spain has manifested itself. The revo-

lution has been attended with various degrees of success in the several parts of Spanish America. In some it has been already crowned, as I shall endeavour to show, with complete success; and in all, I am persuaded that independence has struck such deep root, that the power of Spain can never eradicate it. What are the causes of this great movement?"

We have frequently had occasion to advert to the absurd and cruel restrictions which are put, by the Spanish Colonial System, now greatly moderated, upon the commerce of all its dependencies. From this South America was a principal sufferer, and they have had much influence in paralyzing its industry and arresting its progress. That other causes may be assigned for the relatively-unimportant position of the republics which have been established there, and their slow advances in population and wealth, made even under a system of freedom, is not denied. With equal advantages of soil and climate, the inferiority of the Spanish and Creole character tend to place the countries inhabited and administered by them, even under the best possible systems, far, very far behind those in which the Anglo-Saxon element is allowed to operate. Industry and unlimited enterprise are the inheritance of the latter. Indolence and pride hang like an incubus upon the former. The law of one is progress, the other decay. The Anglo-Saxons have been sweeping everything before them on the North American continent, and establishing an empire which is felt, respected and feared, in every quarter of the globe. Their arts, their policy, and their institutions, find imitators where, but a few years ago, it was fashionable to revile. The old thrones of Europe are being shaken down by the young Hercules of America. It is impossible to foresee the ends which are to be ultimately worked out. Will the knowledge of power and resources be followed by their abuse? Will the love of enterprise, and the desire of more extended territory, already so plainly manifested among us, lead to excursions upon the impotent neighbors that surround us upon every hand? Have not results in Mexico taught the *invincibility* of the American arms? What power on this continent is there that can arrest their progress? What army that would not be shattered to pieces in the encounter? What state whose capital would not be occupied? We are not vaunting our prowess in haughty pride, but adducing sentiments and facts *universally* admitted. The time has even passed when Europe can interfere in the movements of the western world. The powers have enough to do in looking after each other, and preventing the overshadowing importance of any particular one. Mr. Calhoun, the other day in the Senate, scoffed, with great propriety, at the apprehension of English power being unduly exercised upon this continent again. There is no European army that could be brought to this country and landed, large enough to withstand the force that could be brought against it. It is but too evident that the destinies of America are in *our* hands. Wisdom and moderation should induce us to attend to our own peculiar affairs, and leave other American powers to do the same. The Mexican war was in many respects unfortunate, and we hail the peace with gratification. We have

territories enough to be peopled for a generation to come. We have states enough formed and in embryo to govern. Let us leave events to take their own course. The North Americans *will* spread out far beyond their present bounds. They *will* encroach again and again upon their neighbors. New territories *will* be planted, declare their independence, and be annexed! We have New Mexico and California! We *will* have Old Mexico and Cuba! The isthmus cannot arrest—nor even the Saint Lawrence!! Time has all of this in her womb. *A hundred states* will grow up where now exists but thirty. Let us not anticipate. The end of all this shall come, and God only can tell what it will be and when.

We condense the leading particulars of the trade of South America, during the colonial state, from the earliest periods.* The alcavala was the most destructive tax upon national prosperity, and amounted to four or six per cent. upon every transfer of property and every contract of sale.† The government established monopolies in certain taxed articles, extending even to the necessities of life. The colonial trade was at first confined to particular classes in both countries, afterwards it was opened to all Spaniards, but confined to the single port of Seville, which became the emporium of American trade. In 1720 the monopoly was transferred to Cadiz. Twenty-seven vessels were annually fitted out for the supply of Peru, Chili, and Terra Firma. With other than these fleets the colonists were forbidden to trade, or with any foreigners, or with each other. No colonist could embark his goods to Spain on his own account. A board of trade regulated the periodical fleets from Spain and their cargoes. A license from it was necessary to load or land a cargo. The smallest possible amount of goods were sent to the colonies; the crown exacting the same duties as upon larger shipments, would thus find the collection of them much easier. An impost was levied upon the bulk of the articles shipped, without regard to their value. An *endulto* was levied upon every arrival of produce from America, and was fixed anew on each return of the fleets. Though Spain could not supply all the wants of her colonies, she admitted of no purchases of foreign goods by them except through Cadiz and Seville. The monopolists of these cities realized profits of 170 and 250 per cent. on the colonial trade! According to Ulloa, a pound of iron was worth one dollar in Quito, a statement we can hardly credit. Contraband traders very naturally multiplied. In 1740, other expeditions than the periodical ones were allowed to sail from the colonies, but the licenses for this trade constituted a heavy tax upon exports. In 1764 regular packet-boats were established between Corunna and the chief ports of America. Then cargoes were limited in extent, and to Spanish produce. In 1765 the trade of the windward colonies was laid open to several ports of Spain. In 1766 the cotton trade was opened to Catalonia duty free, and in

* Paper by Hon. Joel R. Poinsett; Am. State Papers, 1818.

† The alcavala, according to Adam Smith, was at first a tax of ten per cent., and afterwards of fourteen per cent. on all sales of property or goods.—*Wealth of Nations*, book v. chap. 2.

1772 to other provinces. In 1774 colonial produce, duty free, was admitted into several ports of Spain. The ordinance of 1778 abated some of the enormous duties. The supply of slaves from foreign sources was permitted, first from the French and then from the English by the treaty of Utrecht. There resulted a contraband trade in other things, however, which caused a war between Great Britain and Spain. The slave trade then passed to a private company, whose entrepot was at Porto Rico. The government took upon itself the supply, and a contract was made with a British house for 3,000 annually. In 1789 the slave trade with the colonies was thrown open to all persons whatever. In 1778 the Council of the Indies decreed free commerce, if in Spanish built and owned vessels, with all the officers and two-thirds of the crew Spaniards. The colonial ports were classed with a view to privileges. Articles of the growth and manufacture of the mother country were called free, and paid 9 per cent. duty; those of the manufacture only, paid 12½. Foreign goods, received in the colonies through Spain, paid, including all charges, in all the ports, 33½ per cent. The duties on 74,000,000 reals of imports into America in 1778 was 32,000,000 reals; on 74,000,000 exports from America, 3,000,000 reals vellon. In 1788 the exports to the colonies were 500,000,000 reals; imports from, 800,000,000 reals.

After the British invasion of South America a new era opened in the trade of Buenos Ayres. The most exaggerated notions became prevalent in England with regard to its importance. It was even thought the loss of the United States might be compensated from this quarter. On the withdrawal of the British troops, the viceroy was obliged to yield to popular clamor and open the ports to neutrals. The duties, however, were too high to attract many from the United States to enter, though British and Spanish capital availed itself of our flag. On the establishment of the Junta in Buenos Ayres, the ports of the Plate were opened to the British flag. A large capital took this direction. The market was overstocked with every article of British manufacture. Even skates and warming-pans were introduced by these sapient traders, like coals into Newcastle. The merchants often lost, not only the prime cost of the articles and freight, but had to pay a further sum for duties. English calicoes were retailed, three hundred leagues from the coast, below the London price—a state of things which has, no doubt, existed during the late Mexican war; more liberal duties and regulations, however, were the result. In 1818, Buenos Ayres continued to be overstocked with English goods. Vessels were even dispatched from the River Plate direct to China and India. "In the hands of freemen," says Mr. Poinsett, "who were sensible of its advantages, and under an enlightened government, Chili, from the number and variety of its productions, which yield the raw material of every sort of manufacture, has within itself the means of greatness. And from the number of its harbors, and great extent of coast, might carry on an extensive and lucrative commerce with the intermediate ports, with the vice-royalty of Lima, the Philippine Islands, the East Indies, and China,

The following summary, made by Gregorio Tagle, Secretary of State of La Plata, and communicated to Congress by our agent, Mr. Graham, in 1818, is worthy of introduction.

PRODUCTIONS, MANUFACTURES, &c.—REPUBLIC OF LA PLATA.

Buenos Ayres.—Grain, hides, tallow, wool, horns, hair. These are an inexhaustible supply of commercial resources. The trade with the Pampas Indians alone in montas, wool, salt, bridle reins, and feathers, exceeds the sum of \$100,000 per annum.

Paraguay.—Wood of a superior quality of many varieties, mani, tobacco, guambe, peasaba for cables, honey and molasses, dried sweetmeats, sugar, rice, cotton cloths, gums, raisins, fancy birds.

Cordova.—Grains, hides, woollen and cotton cloths, mules and herds, lime, minerals of gold and silver.

Mendoza.—Dried fruits, wines, brandy, grain, cattle, woollen, wagons for transportation, minerals of gold.

Tucuman.—Woods, grain, rice, oranges, mani, tobacco, wax, cotton, cheese, woollen, herds, wagons, &c.

Salta.—Herds, mules, grain, sugar, honey, molasses, brandies, wool, woods, minerals of gold, silver, copper, iron, and tin, sulphur, alum, vitriol.

Corrientes.—Hides, hair, cotton, agi, mani, honey, dried sweetmeats, sugar, charcoal, cotton, woollen.

Entre Rios and Banda Oriental.—Ox hides, horse hides, deer skins, otter and chinchilla skins, tallow, dried and salt meat.

Mr. Poinsett thus describes the vice-royalty of Peru :

“The bay of Tumbes separates it on the north from the kingdom of Granada; the river of Loa on the south, from the desert of Alakuma and the kingdom of Chili. The Cordillera of Vilacota in 14° south, separates it from Buenos Ayres. On the east it is bounded by an immense desert, and on the west by the Pacific Ocean. The face of the country is extremely unequal; bordering on the coast it is a barren, sandy desert, with a few small but fertile valleys, and in the interior are the lofty mountains and deep valleys of the Cordillera. The temperature varies therefore in the same latitude. In the habitable parts of the mountains the thermometer of Reaumur varies from 3° below 0 to 9 degrees above it. At Lima, and generally along the coast, the constant variation of the thermometer is from 13° to 23½°. The productions of Peru follow the nature of its different climates. Wine, oil, and sugar are the most valuable productions of the coast, corn and wheat of the valleys, bark and cocoa of the mountains.”

The following, from the same pen, sketches Chili :

“From the Cordilleras de los Andes to the Pacific, the inclination is so great that all the rivers flow with the rapidity of torrents and are therefore not navigable. They serve to irrigate the valleys, and render them the most fertile in the world. The climate makes this method of cultivation absolutely necessary, for from the Salado to the Stata, that is, from 25° to 36° of south latitude, not a cloud is to be seen above the horizon from the month of November to the month of May. The atmosphere during this period is perfectly clear, and the dews are scarcely perceptible, nor is the heat oppressive. The proximity of the Andes tempers the air, and the mercury fluctuates between 70° and 80° of Fahrenheit and rarely rises to 85°. Thunder storms, so frequent on the east of the Andes, are unknown in this part of Chili. Winter commences in the month of May, the cold is mild, and the rains gentle and unattended with wind. The rains of the winter fertilize the hills, and the plains, which cannot be irrigated during that season, afford pasture for the cattle. The spring commences in September, and the face of nature then in Chili is peculiarly beautiful. The hills are verdant, and covered with innumerable flowering shrubs, and the plains present to the eye a carpet of flowers. The abundance of water and the peculiarity of the climate enable the inhabitants to raise all the fruits of the earth in great perfection. The wheat

which is cultivated in the valleys is of excellent quality, and the product seldom less than forty times the seed; sometimes ninety, and on the best lands even one hundred. Indian corn likewise is cultivated, and on the best lands produces abundantly. Barley is raised in great quantities for the use of horses and mules, which in the winter are fed on this grain mixed with chopped straw, as in Arabia and old Spain. Hemp and flax grow abundantly. Cotton is here and there cultivated for domestic manufactures; and there is one sugar plantation. The climate and soil are well adapted to the culture of sugar, but they have been long accustomed to get that article from Lima, in exchange for their wheat, and are not disposed to change the ancient habits. Rice would likewise grow on the low lands, but it is brought from Lima."^a

Mr. Bland, one of the commissioners to South America in 1818, furnishes a picture of the vast *pampas*, or pasture grounds of Buenos Ayres:

"The pampas, which forms a part of the territory of Cordova and of Santa Fe, and all that of Buenos Ayres, if measured entire into the country of the Patagonian tribes, extends in length 1500 miles, and in breadth in a direct line, following the southern boundary of the Union, 500 miles, from the ocean to its western confines. Over all this immense space there is not a tree, not a shrub, nor a single perennial plant to be seen, save only those few which here and there lift their heads near a herdsman's hut. There are no hills nor eminences, and the undulations are so gentle, as only to be perceived by taking a long view over its surface; and then the eye passes round and round the horizon as over the face of the undulating ocean in a calm, where there is not a single object to delight or to relieve, or to vary the scene. The keen blast called the pamperos, sweep over the houseless and unsheltered plain without the least obstruction, and the fierce rays of the sun are felt in all their unmitigated fervor. You are sometimes in sight of thousands of animals, but they are chiefly horned cattle and horses, and deer, ostriches, wild dogs, &c. fly as you approach. For awhile the pampas presents the mind with an agreeable astonishment, but that soon subsides, and the eye may often be directed in vain in any way to obtain a single glance of society. Surrounded by a boundless, silent sameness, one sensibly feels the value of the voice and variegated scenes of nature. This interminable plain spreads out one of the most expanded and awful solitudes on earth."

These general observations and reflections must, however, be brought to a close, as there will be scarcely sufficient space otherwise for the particular enumeration and description of states intended in this article. We therefore proceed at once to this, the second part of our labors.

POPULATION AND AREA OF AMERICAN STATES IN 1838.

	Sq. Miles.	Population.	Whites.	Indians & Col'd.	Slaves.
Araucania, ...	28,000...	450,000...	.....	.....	.....
Argentine Republic, ..	1,060,000...	1,000,000...	.....	.....	.....
Bolivia, ...	318,000...	1,200,000...	300,000...	900,000...	.....
Brazil, ...	2,740,000...	6,060,000...	843,000...	3,130,000...	2,086,666
Chili, ...	101,000...	602,000...	130,000...	472,000...	.....
Colombia, .....	.....	.....	.....	.....	.....
Ecuador, .....	.....	550,000...	.....	.....	.....
Granada, .....	.....	1,686,000...	.....	.....	.....
Venezuela, .....	.....	829,000...	.....	.....	.....
Paraguay, ...	146,555...	600,000...	60,000...	540,000...	.....
North Peru, ...	954,000. {	831,000 {	136,311...	729,315...	284,773
South Peru, ...		494,000 }			
Uruguay, ...	223,978...	175,000...	20,000...	155,000...	.....
Patagonia, ...	441,309...	150,000...	.....	150,000...	.....

ARAUCANIA is an unimportant territory north of Patagonia, and included within it on the maps. The inhabitants are ignorant, and

^a Am. State Papers, 1818.

are chiefly limited agriculturists and shepherds. There is much curious interest connected with the history of this people.

ARGENTINE REPUBLIC, OF BUENOS AYRES. It formerly included Monte Video and Paraguay, as we have seen. Cattle and agricultural products form the chief source of wealth; wool is also exported, of superior growth. The Argentine Republic is broken up into a number of minor republics, associated together; and Paraguay and Uruguay, or Monte Video, are but nominally included. These states have set up a separate government. The minor republics or provinces are Entre Rios, Santa Fé, Corrientes, Misiones, Bajada de Santa Fé, Cordova, San Luis de la Punta, Mendoza, San Juan, Rioja, Catamarca, Santiago, Tucuman, Salta. *Buenos Ayres*, the capital, has a population of 80,000, almost entirely of the Spanish race. Its trade is very considerable. The government consists of an Executive, elected for five years, with his appointed council, and a Junta, elected every year. Rosas entirely subverted this constitution, and established a military despotism. The internal trade and navigation is considerable.

In 1828 sixty-four British ships, of 12,746 tonnage, entered Buenos Ayres. In 1836 the whole number of arrivals were 213, of which 37 were from the United States; tonnage 36,117; value of cargoes 39,422,134 current dollars. The number of ships departing were 224—40 to the United States; value of cargoes 29,967,611 current dollars. Contraband trade has been extensively conducted in consequence of the disorders in the republic.

EXPORTS—BUENOS AYRES, 1843.

		Value—piastres.	Value—franca.
Hides.....	1,459,992	65,000,000	21,024,000
" salted.....	518,381	26,955,000	8,626,000
" of horses.....	50,238	1,105,000	354,000
Skins, sheep, doz.....	94,921	2,848,000	911,030
" goat.....	39,695	1,191,000	381,000
" calf.....	6,236	187,000	60,000
" otter, lbs.....	312,612	1,094,000	350,000
" deer, doz.....	4,658	56,000	18,000
Horse Hair, arrobas.....	109,488	4,380,000	1,402,000
Wool.....	468,790	10,313,000	3,300,000
Tallow.....	390,216	9,755,000	3,122,000
Ostrich Feathers, lbs.....	15,500	233,000	75,000
Salt Meat, quintals.....	162,184	5,676,000	1,816,000
Leather Shavings.....	9,556	239,000	76,000
Candles, caecs.....	2,394	96,000	31,000
Horns.....	1,035,325	312,000	100,000
Bones.....	1,462,500	241,000	77,000
Total Exports, in piastres.....			130,381,000
" " France, at the rate of 32 cts. per pias.,			41,723,000
" Value, £ sterling.....			1,649,200
Or about.....			\$8,000,000

BOLIVIA, or Upper Peru. More than three-fourths of the inhabitants are aboriginal Indians. The chief manufactures are of cotton, woollens of the hair of the alpaca and llamas, glass, silver vessels, fans, &c. Commerce is inconsiderable, growing out of difficulties

of transportation. Nearly all the products of Bolivia go to Europe, from the Pacific, after a terrible and rocky land-carriage of a considerable distance. Nothing but the precious metals and the most valued goods can endure the cost. Previous to 1829, Bolivia was included with Buenos Ayres. The independence of the country was then secured under Gen. Sucre. Its present name was taken from the liberator, Bolivia, who drew up its constitution. This constitution and code have been abandoned, though the government is still vested in a president, senate, tribunes and censors.

The vast empire of BRAZIL compares with China and Russia in extent; having an Atlantic coast of 4000 miles, and an area of nearly three millions of square miles. The climate is of consequence very various, though in general mild and regular. Mr. Von Langsdorff, consul at Rio, remarks: "Winter, in this country, resembles summer in the North of Europe. Summer appears one continuous spring, while spring and autumn are unconsciously lost in winter and summer."

"Stern winter smiles on this auspicious clime,
The fields are florid in eternal prime;
From the bleak pole no winds inclement blow,
Mould the round hail or flake the fleecy snow;
But from the breezy deep the groves inhale
The fragrant murmurs of the eastern gale."

All the trees and products of the West Indies abound in Brazil. In the southern provinces, the grains and fruits of Europe succeed. The finest and most valuable woods abound. Scarcely a two hundredth part of Brazil is in cultivation. "The luxuriance and richness of this vegetable world, is ascribed, by Humboldt, to the great moisture which everywhere prevails, and which gives it an advantage over all other hot countries; forming a more happy and fertile contrast to those parts of Africa which lie within the same parallels of latitude. In many respects the climate, the soil, the varied surface, and the rich vegetation, seem to resemble more some parts of Asia Minor. But in that exuberance of ever-green foliage, which forms the peculiar characteristic of a new continent; in the number of its richly wooded mountains; the sources of countless springs, and the abundance of large streams; in the character, even, of its sandless deserts and indomitable forests, the tropical regions of Brazil are almost pre-eminent to those of any other region."*

Vast quantities of cattle are reared in Brazil, several thousands being common on a single estate.

The mines of Brazil are most prolific of iron, gold and diamonds. The largest diamond in the world was found here. In the search for them, the earth is carefully washed after being taken from the beds of the rivers. The operation is performed by negroes, who receive their liberty when fortunate enough to find a valuable gem. 30,000 negroes have been so employed, and the mines are worked by government. The whole value of diamonds found in the eighty years, ending 1816, was not supposed greater than three and a half millions

* McGregor on America, p. 1332.

sterling, little greater than the sugar and coffee export of a single year ! After Mexico and Peru, says McCulloch, Brazil has furnished Europe with the greatest quantity of precious metals. The rage for mining has, however, abated, and the people have betaken themselves to the more rational and profitable pursuits of agriculture. There is a large iron foundry belonging to government, which was considered in 1843 a failure.

The population of Brazil are free and slave ; the former including Europeans, white persons born in Brazil, mulattoes, aborigines, Africans, &c. There are 88 titles of nobility, viz. : marquises, viscounts, counts and barons. The whole population, in 1844, was 4,450,249, a very inconsiderable number for so vast an empire. McCulloch makes the estimate about 7,000,000. One-half, nearly, are negro slaves, and one-sixth only of Portuguese blood. Mr. Kidder, who lately visited Brazil, says, " the Catholic religion and the priesthood are falling into decay."

Brazil was discovered by the Spaniards, in 1500, and soon afterwards by the Portuguese, which gave rise to serious disputes. The Dutch, French and English plundered the earliest settlements. The Dutch held possession of different positions till 1654, when they were expelled. In 1808, the Portuguese sovereign removed his court to Brazil, and threw open the ports to all friendly and neutral powers. A revolution having taken place in Pernambuco, the Portuguese constitution was adopted to arrest its progress. On the king's leaving for Portugal, a struggle ensued, which resulted in the establishment of the *independent* Empire of Brazil, under the son of the Portuguese king, in whose family it still remains.

The cities of Brazil are upon the coast, the harbors fine, and rivers extensive. The Amazon is one of the wonders of the world. It was discovered by Orellana, who, in a frail craft, descended it from the mountains of Peru to the mouth. His description, published in Europe, was exaggerated and embellished in the highest degree, and gave rise to the *El Dorado*. A race of giant female warriors were described, which gave name to the river. These accounts were for a long time credited.

" Considering, says a historian, the lengthened period during which Brazil has been colonized, its vast extent and fertility, the variety of its productions and its favorable situation for commerce, its progress in the accumulation of population and wealth has been extremely slow. This apparent anomaly may, however, be easily explained. The slow progress of Brazil, like that of the contiguous *ci devant* Spanish colonies, is entirely owing to the vicious principles on which it was governed by the mother country, and to the rigid exclusion of foreigners from the country ; the oppressive restrictions laid on the trade and industry of the colonists, and more than all the rest, to the ignorance of the Portuguese, and their inferiority in respect of science and art to most other nations of Europe. Portugal could bequeath nothing to her colonies but pride, superstition, and intolerance ; but since the downfall of the old colonial system, consequent on the emigration of the court to Brazil, the foundations of a new and better order of things have been laid ; *novus seclorum nascitur ordo*. The settlement of thousands of foreigners in Brazil, and the unfettered intercourse she now carries on with all the most civilized countries in the world, have already had the best effects ; and though it will require a lengthened period to counteract the joint influence of ignorance, slavery and a debasing superstition, Brazil is rapidly rising, not merely in the scale of wealth and population, but also in that of civilization."

We proceed to notice the most important cities and trade of Brazil.

Para is situated on one of the mouths of the Amazon, called Para River, 80 miles from the sea. The regular ebb and flow of the tides of the sea are observed for six hundred miles above the mouth of the Amazon. The position of Para is admirable for commerce. Its highways and by-ways are all by water, on bays, rivers, lakes and creeks. Manufactured goods, silks, hardware, wines, spirits, porter, salt provisions, salt, flour, furniture, oil, gunpowder, iron in bars, lead, cordage, and sail-cloth, are imported to the amount of half a million of dollars. The export, in 1845, reached £147,505 sterling, embracing cotton, rice, rum, India rubber, cacao, cloves, coffee, gums, drugs, cabinet woods, etc. etc. The manufactures are cotton sacks and India rubber shoes.

Maranhão is a town of 30,000 inhabitants, and exhibits a general neatness and air of enterprise, said to be uncommon in the other towns of the empire. The imports in 1841 were £359,526, exports £319,833.

Parahiba exported in 1844, 2,134 tons of sugar, valued at £33,493 sterling; 23,172 bags of cotton, valued at £80,765 sterling; 20,583 hides, £9,005 sterling.

Pernambuco imports cotton goods from the United States; cod-fish, tea, earthenware, hats, flour, iron, etc., from England, France, and Germany.

EXPORTS PRODUCE FROM PERNAMBUCO—1828-1845.

	Cotton.		Sugar.					Hides.
	Bags.	Cases.	Boxes.	Barrels.	Bags.	Wt.—arrob.	No.	
1828..	70,785	22,870	2,073	31,078	6,771	1,460,628	52,444	
1829..	54,820	21,984	4,973	28,973	8,222	1,463,332	46,573	
1830..	61,151	25,335	3,743	38,576	13,849	1,705,614	65,489	
1831..	53,157	27,970	1,402	42,466	8,429	1,799,986	76,584	
1832..	31,520	21,708	3,895	42,555	3,640	1,518,300	66,656	
1833..	58,564	15,507	3,432	54,477	5,444	1,301,612	84,743	
1834..	42,799	12,148	1,262	27,110	1,143	854,088	86,350	
1835..	52,142	17,520	2,846	56,996	9,180	1,388,888	91,492	
1836..	62,832	21,317	4,163	65,337	31,399	1,828,392	90,701	
1837..	43,847	17,774	1,603	57,346	19,248	1,456,420	93,771	
1838..	60,648	20,806	1,929	68,812	29,927	1,750,380	105,851	
1839..	39,173	20,891	3,739	78,800	27,923	1,878,675	111,052	
1840..	35,854	24,946	3,110	86,247	42,168	2,191,093	132,993	
1841..	26,990	23,650	2,149	90,256	66,296	2,261,699	136,494	
1842..	21,357	20,123	1,361	78,739	54,390	1,906,936	125,296	
1843..	35,906	23,161	1,392	60,613	73,204	2,017,522	104,420	
1844..	41,385	21,388	772	75,105	96,890	2,146,688	124,074	
1845..	26,562	19,571	849	61,892	216,015	2,565,824	163,935	

Bahia has a population, it is estimated, of 180,000. It was formerly the principal rendezvous of the slave traders.

EXPORTS AND IMPORTS—BAHIA, 1843.

England.....	frances 15,367,047.....	6,740,242
Hanse Towns.....	1,547,732.....	3,334,472
Portugal.....	2,253,513.....	1,888,917
Austria.....	553,384.....	2,654,002
France.....	2,342,336.....	851,859
Africa.....	262,956.....	1,455,743
Sweden and Norway.....	109,763.....	1,550,751
Sardinia.....	586,884.....	991,926
United States.....	750,353.....	54,637
Sicily.....	226,302.....	439,877
Denmark.....	—.....	411,562
Other Countries.....	342,410.....	456,536
Fishers.....	404,832.....	—
Total.....	frances 24,687,512.....	20,130,524

Rio de Janeiro.—"This port," says McGregor, "is much resorted to by vessels in distress, navigating the ocean between the capes of Good Hope and Horn. Ships of war and merchant vessels, bound round the capes, find this a most convenient place to procure water and fresh provisions. Ships from Europe and North America meet in this great conveying harbor: ships sailing to or arriving from Bombay, Canton, New Holland, New South Wales, Valparaiso, and the various islands of the Pacific, as well as California and Oregon, on the western coast of North America.

"Rio Janeiro has become the chief emporium of Brazilian commerce, and especially of its mining districts. All the ports on the coast south of Bahia, and it may be said, to the frontiers of the Banda Oriental, to Monte Video, send most of their produce for exportation to Europe or for home consumption to Rio Janeiro. Farinha, beans, bacon, dried or salt meat, are brought to the metropolis; hides, horns, dried meat, tallow and bacon, with rice and wheat flour, come by sea, chiefly from the provinces of Rio Grande do Sul and San Paulo; the latter furnishes also cheese, the bark of the mangrove tree for tanning, with some gum woods, sugar, and rum; Santa Catherina sends also sole leather, onions, garlic, dried fish, and pottery. The small harbors to the north of Rio de Janeiro, to wit, João do Paraiba, San Salvador, Macahe, Porto Saguro, Caravelhas, Victoria, &c., supply vegetables and fish, beans, planks, hoops, Brazil wood, bark, charcoal, fuel, cocoa-nuts, tobacco, sugar, rum, rice, &c.

"The inland trade is extensive between Rio de Janeiro and the neighboring provinces. From Rio Grande do Sul and San Paulo, many thousands of oxen, horses and mules, are annually driven to Rio de Janeiro. The inhabitants of the remote provinces of Matt-Grosso and Goyaz bring gold in bars and dust, precious stones and smuggled diamonds, (the latter being contraband,) to exchange for European manufactures; to the smaller ports of Brazil, Rio exports all sorts of European goods; to both the western and eastern coasts of America, English and Portuguese goods; to Europe, sugar, coffee, cotton, tobacco, hides, otter skins, horse hair, &c.; and in

speaking of trade, we must not omit the abhorred traffic in human beings, which disgraces Rio Janeiro."

IMPORTS AND EXPORTS—RIO JANEIRO, 1842-43.

<i>Imports.</i>		<i>Exports.</i>	
	Milreis *		Milreis.
Great Britain.....	13,697,638	Great Britain.....	3,920,629
United States.....	4,028,471	United States.....	6,005,131
France.....	3,985,972	France.....	1,118,036
Portugal.....	1,912,077	Portugal.....	1,205,100
Uruguay.....	1,552,640	Uruguay.....	655,242
Argentine Republic.....	932,092	Argentine Republic.....	704,206
Hanse Towns.....	1,430,875	Belgium.....	928,471
Spain.....	618,249	Hanse Towns.....	3,360,956
Brazil.....	1,062,205	Austrian Ports.....	2,050,075
Other places.....	2,045,460	Denmark.....	544,920
Total.....	31,265,679	Sweden.....	469,097
		Genoa.....	389,063
		Holland.....	34,923
		Uncertain.....	834,190
		Total.....	22,220,309

* The milreis is worth about 50 cents.

CHILI.—Chili stretches in a long, narrow strip upon the Pacific shore of South America. Its rivers have but moderate capacities for navigation. Its agriculture is but slightly attended to. Cattle-raising is a common pursuit. On the coast the fisheries might be prosecuted with great success. The number of copper mines is large, and there are a few of gold and silver. The manufactures are few, and of the coarser kind. Since its separation from Spain the commerce of Chili has increased, which cannot be said of other South American states. The increase has been very great. The trade is chiefly with Great Britain; and exports of foreign goods are made from Chili to other states of South America. The imports from the United States are tobacco, candles, oil, sugar, manufactures; those from Peru, dyes, coffee, sugar, pearls, cacao, tobacco, cotton, rice, salt, and spirits; from La Plata, Paraguay tea, cotton, &c. Exports—bullion, copper, hides, tallow, pulse, wheat, fruits, drugs, and European goods re-exported. Chili is a republic, under a president elected for a term of years. It has a congress of 56 members. The revolution commenced in 1810. It was kept under by the royalists from 1817 to 1818; but in that year secured its independence. The chief commercial town is *Valparaiso*.

Capt. Wilkes, of the United States' Exploring Expedition, writes: "I have had some opportunity of knowing Valparaiso, and contrasting its present state with that of 1821 or 1822. It was then a mere village, composed, with but few exceptions, of straggling ranchos. It has now the appearance of a thickly-settled town, with a population of 30,000, five times the number it had then. Most of the buildings are of one story, and built of sun-dried brick. Santiago contains 60,000 inhabitants, and is increasing in wealth and population."

In 1842, there arrived in Valparaiso 375 vessels, of 101,075 tonnage; 10,000 of these tons were from Great Britain, 7,000 from the United States, and 28,000 from Peru. The departures were 311

vessels of 82,390 tonnage, of which 15,000 were to England, 31,000 to Peru, 10,000 to Brazil, and only 2,000 to the United States. The average annual export of Chilian products, from 1836 to 1840, has been stated at £1,139,913.

TRADE, UNITED STATES AND CHILI—1844.

<i>Exports to Chili.</i>		<i>Imports from Chili.</i>	
Fish, Oil, and Sperm Candles....	\$6,953	Bullion and Specie.....	\$185,117
Staves, Shingles, Planks.....	7,535	Copper, pigs, bar, &c.....	355,842
Masts, Spars, Naval Stores.....	2,122	Dye-Woods.....	3,445
Provisions, Beer and Spirits.....	63,489	Leghorn, Straw, &c., Hats....	18,833
Breadstuffs.....	28,462	Wool.....	19,847
Tobacco.....	6,411	Cocoa.....	26,431
Wax.....	9,258	Hemp.....	2,234
Sugar.....	22,550	Manufactures.....	9,470
Manufactures.....	703,951	Sundries.....	127,951
Sundries.....	5,914	Salt.....	600
Exports of Foreign Goods.....	248,576		
Total.....	\$1,105,221	Total.....	\$750,370

COLOMBIA.—This territory in the most northern limit of South America, included in one union the states of Venezuela and New Granada in 1819. The revolutionists, under Sucre and Bolivar, having everywhere succeeded, Ecuador in 1823 was added. Venezuela separated from the other states in 1829, but rejoined them the following year. This union has, however, been broken up, and the states constitute separate and independent governments, which shall be considered in their order.

NEW GRANADA is in the north-west of South America, and includes the Isthmus of Panama. The inhabitants are descendants of Spaniards, Negroes, Mulattoes, Indians, &c., and amounted, at the latest computation, to 1,360,000. Coarse woollens and cottons are manufactured for the consumption of the lower classes. Gold is found in the beds of rivers and in mines; platinum exists on the Pacific shores. The other minerals, of silver, iron, copper, tin, and lead, are not plentiful. Emeralds are abundant in a river north of Bogota; coal occurs on the banks of the Rio Sinu. The average annual value of the trade of Granada is estimated at 40,000,000 francs. The imports in 1840 scarcely exceeded 17,000,000 francs; in 1843 they rose to 23,000,000 francs; in 1844 they fell to 22,000,000 francs. In 1843 the exports were 16,000,000 francs; in 1844, 14,000,000 francs. The contraband trade is very large; the trade is divided in the proportions of

Jamaica and England.....	13,000,000 francs.
France, ...	3,769,000 "
United States, ...	1,000,000 "
Island of Curacao, ...	820,000 "
Spain, ...	610,000 "
Venezuela and Peru, each, ...	750,000 "

The imports from the United States are flour, salt goods, drugs, &c. The port of Carthagena on the coast is one of the finest harbors in the world. The port of Panama conducts chiefly a coasting trade.

A line of steam-ships carry the English mail from Chagres to Valparaiso. The West India steamers leave the mail at the isthmus to be carried across to that point.

VENEZUELA.—“The Republic of Venezuela is a vast, fertile and splendid region; magnificent rivers, fertile forests, high mountains, low alluvial districts, and islands, and plains, are its remarkable features. Its name is derived from a fancied resemblance to Venice in the first Indian villages discovered. The republic is divided into thirteen provinces, of which Caraccas is the most important. The provinces have their governors, and send each two members to the senate. The government and laws are lodged in a President, Vice President, Senate, House of Representatives, &c. Caraccas has a population of 50,000. Its port is La Guayra. The inhabitants of the towns and villages of Venezuela are chiefly farmers. The people and government have acted, it is said, since their independence, with more wisdom than any of the Spanish republics, except Chili. The Orinoco River is 1600 miles long, and receives innumerable tributaries. It is navigable for large vessels five hundred miles—it has several mouths. The regions drained by this river are in wilderness. A steam navigation of its waters would work miracles in a short time. Many movements have of late been made to bring about such a result, with which the reader is doubtless familiar.”

EXPORTS OF VENEZUELA—1845.

Great Britain and British Colonies.....	\$ 1,156,751
United States.....	1,376,596
Denmark and Colonies.....	441,336
Germany, Bremen, and Hamburg.....	701,685
Spain and Colonies.....	1,012,747
France and French West Indies.....	477,494
Holland and Curacao.....	268,135
Mexico.....	81,551
Granada and Goajira.....	6,000
Hayti.....	540
Sardinia.....	43,557
Austria.....	22,000
Other Countries.....	764,000
Total.....	\$ 5,592,159
Or in £ sterling.....	894,745

The imports in the same time, including coin, from all countries, were \$4,961,727, or in £ 793,877.

PARAGUAY, though nominally included in the Argentine Confederation, has scarcely ever joined the association. It was early under the government of the Jesuits, and on the war occurring between Spain and Portugal, the Indians took sides against the latter. The suppression of the Jesuits in France, and Spain, and Portugal, was followed by their banishment from America. The productions of Paraguay are numerous. Quantities of timber are floated down to Buenos Ayres. Tobacco, sugar and cotton, are exported; caoutchouc and indigo grow wild; Paraguay tea has been exported to the amount of 8,000,000 lbs. The state of cultivation is superior to that of the neighboring Argentine states. Mr. Robinson saw white-washed cottages among the trees, surrounded by fields of cotton,

yucca, and tobacco, Indian corn, sugar cane, &c. The dictator possessed nearly half the country, in consequence of Jesuit confiscations. It is administered for the state, and agricultural improvements are extended by despotic regulations. Rice, maize, cotton, culinary vegetables are grown, and the breeding of horses and cattle promoted. The Paraguay tea is said to be as much used in Chili, La Plata, Peru, Brazil, as China tea in England. Mr. Macgregor remarks, if the war between Buenos Ayres and Monte Video were ended—if these countries were tranquilized, the period will have arrived when a very lucrative trade may be carried on with the fertile region of Paraguay, and the countries drained by the Parana and its affluents. The government of Paraguay is an anomaly in the present times, says McCulloch; it approaches as near an absolute despotism as can well be conceived; the dictatorship of Sylla, in ancient Rome, being the only model with which it may be compared. The second consul, Dr. Francia, had himself declared, in 1817, dictator for life. Under his government the country exhibited great industrial improvement.

ECUADOR, since the dissolution of the Colombian union, has formed an independent republic, governed by a president chosen for eight years, and a legislature of two houses. "In the western region of Ecuador, Indian corn, plantains, yams, cacao, tobacco, sugar, cotton, and different kinds of tropical fruits and vegetables are cultivated." From the elevated plains and valleys of the mountain region, wheat is sent down to Guayaquil and other low districts. Towards the southern extremity of the Andes, there are extensive forests. The great plains yield wax, gum, resin, and sarsaparilla. In the mountain region, cattle in large herds, horses, mules, and sheep, are pastured. Turtles are abundant in the Amazon; the *manta* fish abounds on the Pacific coast, and is salted for the Guayaquil market. Pearls were formerly fished; cochineal is collected near Loxa; small quantities of gold, silver, lead, and quicksilver are found. Salt is made on the coast. The manufactures of Ecuador are more important than those of any other of the South American republics; coarse woollen and cotton stuffs are woven at many places in the elevated valleys. There are manufactures of silk, and some tanneries. The city of Guayaquil contains 25,000 inhabitants. It supplies the settlements of the mountain coast with wine, brandy, and the sugars of Peru and Chili, and with European merchandize.*

EXPORTS, GUAYAQUIL—1843-44.

1843	Cocoa,	15,239,970 lbs.	Value, £	170,433
1844	"	8,565,500 "	"	105,788
1843	Cotton,	80,000 "	"	1,920
1844	"	256,000 "	"	4,618

PERU.—The constitution of the present government of Peru was framed in 1823, upon the basis of that of the United States. The senate and chamber of deputies are chosen by the people; as also is the president every four years. The Span-

* Macgregor, 1001—We have adopted his language.

ish system, which limited supply, forced the inhabitants of Peru to make some indispensable articles. Coarse cotton and woollen stuffs are manufactured. At Lima, arequipa, cuzco, gold and silver vessels, utensils, trinkets, and ornaments are made. The internal trade is impeded from the want of roads. A trade in gums, cotton, resin, wax, sarsaparilla and coarse cottons, called *Tucuya*, are exported from the eastern districts to those of Brazil, near the Amazon. The maritime commerce of Peru is chiefly with the western coasts and other republics of America, with Mexico, Central America, Guayaquil and Chili; to which countries, sugar, wine, brandy, salt, and other articles are exported. Gold, silver and saltpetre are also exported. The sugar mills, in the Valley of Huanuco, are made of wood and worked by oxen. On the larger estates, brass rollers are used, but with a single exception, the estate of Andaguaylla, the proprietors adhere to the old practice of working by oxen by day and by night, throughout the year. All accounts agree upon the degeneracy of Peru since its independence. The population has decreased vastly. Von Tschudi, quoted by McGregor, gives a frightful account of prevailing immorality. He says, "the number of new-born infants exposed and found dead, is very great. When a dead child is picked up before the church, or in the street, it is carried without a word of inquiry to the Pantheon. Frequently it is thought not worth while to bury it. Vultures drag about the sweltering carcasses of infants, and devour them in the populous streets." The silver mines of Pasco are the richest in South America. There exist quicksilver mines at Huancabelica. Gold-dust and fragments are found in several rivers. Copper, iron, lead and sulphur exist.

Lima is the chief city of Peru, and is elevated 560 feet above the level of the sea. The houses are low, in order to stand the effects of earthquakes. Population, 45,000. Its trade is conducted through the adjacent port of Callao. Capt. Wilkes, of the United States' Exploring Expedition, who visited Lima in 1821 and 1841, marks the change: "Everything betokens poverty and decay; a sad change from its former splendor and wealth. The country has been a scene of commotion and revolution for the last 25 years. The neglected walls and ruined tenements, the want of stir and life among the people, are sad evidences of decay."

Callao, according to Capt. Wilkes, has improved. The streets have been made much wider, and the town has a more decent appearance. Water is conducted from the canal to the mole, and a railway takes the goods to the fortress, which is now converted into a depot. The best idea of the trade of Callao may be formed from the number of vessels that frequent it. The usual number in port is about 40, in the proportion of 9 ships of war and 35 merchantmen.

The progress of Peru has been greatly retarded by its vicious administration of government. Monopolies of every kind have been established. A monopoly of navigating the coasts and ports of Peru in steam vessels has been granted for ten years to Mr. Wheelwright.

EXPORTS, PERU—1839, 1840.

	1839.	1840.		1839.	1840.
Bark.....	\$50,327	117,999	Saltpetre.....	\$299,152	454,712
Bullion, &c.....	6,554,141	7,810,746	Sugar.....	52,150	—
Chinchilla.....	11,016	9,648	Tin.....	61,867	64,948
Copper, &c.....	91,089	105,210	Wool—vicuna.....	752	910
“ in bars.....	14,637	21,318	“ sheep's.....	252,032	295,208
Cotton.....	371,800	429,444	“ alpaca.....	397,650	412,500
Hides.....	6,859	19,090	Total Exports, 1839.....	\$8,164,349	
Horns.....	320	—	“ “ 1840.....	9,741,733	
Seal Skins.....	556	—			

IMPORTS INTO PERU—1840.

From France.....	\$1,450,000
“ Great Britain.....	6,150,000
“ United States.....	1,400,000
“ Canton and Manila.....	300,000
“ Germany.....	300,000
“ Spain and Cuba.....	300,000
“ Italy.....	200,000
Total.....	\$10,100,000

URUGUAY, or Monte Video, has an undulating and fertile soil, with a temperate climate. The rains fall almost entirely during the winter months. Pasturage, rather than cultivation, characterizes the lands. The exports are hides, skins, hair, horns and jerked beef. The city of *Monte Video* contains 20,000 inhabitants. The chief trade of *Monte Video* is with Europe and Havana. In consequence of the siege and blockade of the town, no exports were made in 1844, &c.;

IMPORTS OF MONTE VIDEO—1835.

	Dollars Currency.
From England.....	993,954
“ France.....	351,602
“ Buenos Ayres.....	1275,935
“ Brazil.....	706,428
“ United States.....	333,811
“ Bremen.....	17,403
“ Hamburg.....	33,472
“ Mediterranean.....	352,245
“ Portugal.....	12,720
“ Chili.....	14,702
“ Spain.....	3,127
	<u>\$3,095,398</u>

PATAGONIA and the adjacent islands are in the extreme south of South America. The Indians are tall and bulky, averaging, it is said, six feet, though very exaggerated notions of these tall savages were once circulated and believed. They live under petty chiefs, who are possessed of but little authority. The Spaniards settled, in 1779, Port St. Julian, but speedily abandoned it. The coasts are not often visited by other than whaling ships. Little in this barbarous and almost unexplored country can be worthy of mention.

We have thus taken a survey of all the various divisions of South America in a manner much more hurried and imperfect than we at first anticipated. Scarcely more than a bird's eye view has been presented.

We must apologize to the reader, by pleading the haste of the printers, in getting out the present number of the Review. Whilst writing this sheet, the previous one is in the compositors' hands, a thing very common in our editorial experience. To Mr. McGregor we make all acknowledgments for the assistance derived from his valuable work.

ART. II.—THE SUGAR CANE.*

McCULLOH'S REPORT ON SUGAR TO THE UNITED STATES GOVERNMENT, REVIEWED.

New-Orleans, June 1, 1848.

Prof. J. D. B. De Bow :

IN the March number of your Review, (page 249,) one of our sugar planters, who is also an able refiner, has stated some incorrect facts, in the report of Professor McCulloh, made relative to the sugar culture in Louisiana. Yet Mr. V. Aime, the author of these remarks, has only touched the part which has some reference to the improved apparatus, and to the ameliorations which have been introduced in the manufacture of sugar, for some years past. His long experience, his practical knowledge on this subject, have certainly given him the right to correct the errors of the learned Professor McCulloh, who, in my opinion, has not always done justice to the Louisiana planters, in neglecting to notice the efforts which they have never ceased to make, in order to ameliorate this important branch of industry, notwithstanding the immense difficulties which surround it.

It is impossible not to approve the excellent critical remarks which Mr. Valcour Aime has made, and for my own part, I think them perfectly just. Like him, I have had opportunities of examining, at different times, the finest sugar works in Cuba, and I did not find that they have made greater progress there in this branch of industry than in Louisiana. But if we agree on this point, as we do on many others, there is, nevertheless, one point on which we entertain a slight difference of opinion. In commencing his remarks, Mr. V. Aime declares that the report of Professor McCulloh "*is the work not only of a man of science, but of a conscientious one, who has represented things as faithfully as he could, and without any kind of deception.*"

I am willing to admit, with Mr. V. Aime, all the high qualities which distinguish the author of the report; I do not deny him any. But, sir, are all these high qualities sufficient to render the chemical part of the professor's work exempt from faults? Assuredly not. I will now endeavor to show you, that with science, and the best faith in the world, it is possible to commit gross mistakes.

In my opinion, the work of Professor McCulloh is essentially de-

* It is but fair to the author to remark, that his criticism was originally written in the French language, and translated in our office into English.—[Ed.]

fective. The scientific or chemical part is radically and insufferably bad. This is the point of difference between Mr. V. Aime and myself. In his excellent remarks, Mr. V. Aime has shown you that the purely practical part of this work contains nothing new; that it is of little value; that, on the contrary, it contains a great many errors, and has proved it to you. I will proceed to show you that the scientific part is worth still less than the practical.

Since the appearance of this report, many of the New-Orleans journals have analyzed and lauded it, in terms more or less extravagant, according to their inspirations or tastes. There are, perhaps, circumstances in which the puff is permitted, or at least tolerated. But when the subject treated of is of such importance as that of the sugar culture in Louisiana, it seems to me it is highly culpable to bestow such extravagant praise on a work like Professor McCulloh's. As a serious work, this report is undeserving any eulogy. Truly, the critic, in reviewing it, has little or nothing to do.

The mission of Professor McCulloh was one of high interest. I believe you will agree with me upon that point. His report having been made public, every one has a right to praise or criticise it as he pleases. The opinions which I am about to express, are entirely disinterested. Relying on those pompous eulogies, which I had seen in a daily journal, I hastened to procure a copy of this report. I commenced its perusal with attention, in order to discover the *interesting chemical researches* which I expected to find; because, I confess, I am naturally curious about these sorts of novelties. I had believed that a work of the kind could only be undertaken by an able man, by a skilful chemist, and one who was also well-versed in the practice of making sugars.

I will not undertake to make a formal and regular criticism of this work; the task would be long. I might tire your readers, and it would be painful for me—I say *painful*, for I confess that I always experience a sort of unpleasantness in exposing the errors made by an author, especially when they are so great as those made by Professor McCulloh. You will look in vain for a single paragraph in the chemical part of the report which does not present an open flank for the attack of the critic. I appeal, sir, to all persons who have the slightest knowledge of chemistry. I will not, however, take advantage of the unfavorable position in which the author has placed himself. I will confine myself simply to the most glaring errors.

The process followed with a little too much confidence by the professor, in the experiment on molasses and raw sugar, has been tried in France long ago. The principal fault of this method is, that it is only applicable to the simple cases of a dissolution of *pure sugar* in water. If the liquid sugar to be examined contain foreign substances in solution, matters gummy, mucous, lactose, glucous, glutinous sacchamates, in general, the hydrate of carbon and other substances badly defined, mineral and organic salts, they act in the same manner as crystallizable sugar, and lead the operator into error. In acting upon a solution of pure sugar, the mistakes are

not less than from two to three per cent; but in acting upon molasses, they become monstrous! I will return again to this subject.

In estimating the quality of foreign molasses arriving in the northern ports, the professor has made serious mistakes; but, with the assistance of his favorite algebraic formula, and some logarithms, he arranges all that in the most elegant manner in the world; he extricates himself from this false position like a skilful man; to embellish his errors, he adorns them in a mathematical form! To say the least, it seems to me ridiculous to apply a learned algebraic formula to an experiment on molasses. We ought to have recourse to these means only, when acting upon bodies perfectly well defined, admitted by all the chemists, and of which the elementary composition is known. Otherwise, I repeat it, we are subject to fall into serious mistakes.

Molasses is, by itself, a very complex liquid, the intimate constitution and composition of which, the professor seems to be entirely ignorant of; while his plan, aided by his formula, makes him commit errors from 10 to 12 per cent. in the appreciation of its richness in sugar, and that, without his being aware of it. Is the professor ignorant that, independently of organic matters, molasses from Cuba and other sugar-producing countries, where the cane attains a complete maturity, contain from 15 to 20 parts in the thousand of saline matters—salt of potash, salt of lime, of magnesia, hydrated silica, and that these matters can vary strangely in their proportions, according to the localities where the cane is cultivated? In this letter I propose to prove to you, that the molasses proceeding from raw sugar of Louisiana contains the matters which I have named, in proportions two or three times more considerable!

The appreciation of the real worth of the deposits or sediments, which we find in hogsheads of foreign molasses arriving in the ports of the northern states, that is to say, the appreciation of the quantity of crystallizable sugar which the deposits contain, is entirely erroneous in the report of the professor. The deposits are often as rich as certain raw sugars, and almost as easy to work by the refiner.

At page 25 of his report, Professor McCulloh has given us a series of experiments or speculations, which he has made to ascertain in what manner the juice of the cane of Tahiti acts with some re-agent which he has employed for this purpose, (it would be the same with the juice of all other varieties of cane,) but it would be difficult to explain with what view he has done it, and wherefore. Since in the *expose* of his researches, he does not at all consider the signs which the re-agent has furnished. If he had analyzed the precipitates, he would doubtless have discovered the presence of phosphates of lime and magnesia in the juice of the cane; hence, he would have been led to find the salts of potash and hydrated silica—the organic matters; all that would have followed, of course.

The experiment which he reports, (page 26,) upon the precipitate occasioned by the acetate of lead, is exceedingly curious. The professor tells us, that after letting it remain 12 hours upon the filter, his cane juice had become so clammy and slimy, that not a drop

passed through the filter. His filter had become impermeable, and he seemed astonished at it!

The professor, then, does not know that in warm climates the juice of the cane becomes deteriorated after some hours of extraction; and that at the end of twelve hours, his juice, the juice upon which he makes his *chemical investigations*, had entirely passed into a state of viscous fermentation!

At page 26, paragraphs 6, 7, 8, and 9, of his report, Professor McCulloh exposes the comparative experiments made upon three varieties of cane, with a view of ascertaining the quantity of juice which they contain per cent. Let him speak for himself:

COMPARATIVE EXPERIMENTS ON THE YIELD IN JUICE OF THREE VARIETIES OF THE CANE.

(6.)—"I weighed, and accurately, 21.111 ounces of ribbon cane, which was then rolled in a handmill, consisting of a pair of small rolls, similar to those used for rolling metals, or to the large rolls of the ordinary sugar-mill. For the use of this apparatus, I was indebted to Mr. Duggan, of the Saratoga Estate, who had caused it to be constructed for similar experimental purposes. The above mentioned quantity of cane thus yielded 12.542 ounces of juice of the specific gravity 1.085, corresponding to 10° Baume of the cross instrument I employed, but to 11° Baume as indicated by the glass pèse-sirop belonging to Mr. Duggan. The wet bagasse obtained at the same time weighed 8.007 ounces.

"The sum of the weights of the juice and the bagasse being only 20.549 ounces, it follows that 0.562 is the weight of juice lost and retained upon the surface of the mill. This loss I considered so great that I was induced to repeat the experiment, with, if possible, greater care, and with the following results: 19.483 of ribbon cane yielded 11.024 ounces of juice, and 7.886 ounces of moist begatta; the quantity of juice retained by the mill, or lost, being 0.573 ounces. Hence we have the comparative results:

	1st Experiment.	2nd Experiment.
Moist begatta.....	37.92.....	40.51
Juice obtained.....	59.40.....	56.58
Juice lost.....	2.68.....	2.91

Ribbon cane.....100.00.....100.00

(7.)—"After drying for forty-eight hours by exposure to air and sun, the 8.007 ounces of moist begatta, of the first experiment, weighed only 3.422 ounces, and had therefore lost 4.585 of water by evaporation. Likewise, the 7.886 ounces of begatta of the second experiment, similarly dried, weighed 3.510 ounces, and had therefore lost by evaporation 4.376 ounces of water; if this water be supposed to be united with one-fourth of its own weight of sugar, a supposition which differs probably little from the truth. Then 5.731 would be the amount of juice retained by the 8.007 ounces of moist begatta in the first experiment, and 5.470 ounces would be the corresponding amount of juice retained by the moist bagasse of the second experiment. Hence it would follow, that the ribbon cane experimented upon consists of:

	1st Experiment.	2nd Experiment.
Woody fibre.....	11.00.....	12.40
Saccharine juice.....	89.00.....	87.60

100.00

"Of the 88 per cent. of juice thus shown to exist in this ribbon cane, 62 per cent. only were expressed; and the begatta of cane ground in large mills probably retains a similar proportion.

(8.)—"From 15.072 of Creole or crystalline cane, rolled in the same manner as the above, 9.399 ounces of juice of the specific gravity of 1.079, or 9°5 Baume, were obtained, and also 5.365 of moist begatta; 0.308 ounces of juice being left on the surface of the rolls. By drying for forty-eight hours in the air and sun, the

5.365 ounces of moist begatta lost 2.666 ounces of water; and supposing this water to have existed in that begatta as saccharine juice, containing about one-fifth of sugar, we have, as the yield by rolling and the composition of this cane, the two following respective results:

Juice expressed.....	64.40	Juice obtained.....	86.50
Moist begatta.....	35.60	Dry woody fibre.....	13.50
	100.00		100.00

Hence we find that only about three-fourths of the juice contained in this cane was expressed by the process employed.

(9.)—"By similar treatment, 10.3855 ounces of Otaheite cane yielded 6,502 ounces of juice of lighter color, apparently clearer than that obtained from either of the other varieties of cane, and of the specific gravity of 1.0875, or 10° 5 Baume; also, 3.652 ounces of moist begatta. It had, therefore, left on the surface of the rolls of the mill, 0.3215 ounces of juice. After drying the begassa for two days in the sun, it weighed 1.9202 ounces, and had, therefore, suffered a loss of 1.7318 ounces of evaporated water. Hence, I deduce as above the results:

Juice expressed.....	64.83	Juice contained.....	85.67
Moist begassa.....	35.17	Woody fibre.....	14.33
	100.00		100.00

"The begassa, therefore, retained 20.84 per cent. of the 85.67 per cent. of juice which this cane contained.

"The crystalline cane employed in the preceding experiments was *plant cane*, while the ribbon and Otaheite were *rattoons*; hence the great difference of density in the juice obtained from the former. A perfectly fair comparison of the three varieties could only be made by using plant canes or rattoons for each; but these experiments serve to show, also, that juice from plant cane is of inferior richness to that from rattoons. In other respects, the canes were similar, and the comparison exact; for they had all grown in the same field, and were of the same age."

All this is very clear, and no person, however simple, can be deceived. Let us examine carefully these four paragraphs, and catch the professor in his own net.

After having passed the ribbon cane into a little hand-mill, the professor found that the juice expressed had a density of 1.085, corresponding, said he, to 10° of the *pese-sirop* of Baumé. The instrument which he used was of copper; but this same juice, marked 11° of Baumé, was, however, by the *pese-sirop* in glass belonging to Mr. Duggan. What can we think of that?

First, we see here two instruments in conflict, one says 10 and the other 11. Which of the two is right?

Well, if the density of this juice was of 1.085, as Professor McCulloh affirms, they were both false. After this, what confidence can we place in an experimentalist who has not even proved his saccharometer?—who, before making his experiments, has not assured himself that it was exact?

Had the juice upon which the professor made his experiments a density of 1.085? or did it weigh 10° in the *pese-sirop* of Baumé? or did it mark 11° in this same instrument? *Fiat lux!* For us, we will tell him that 1.085 density corresponds exactly to 11½° of the *pese-sirop* of Baumé, which makes a pretty considerable difference in its richness in sugar. We will show him this further on.

Juice of this density, in ordinary circumstances, contains per cent. in weight :

Juice.....	89.00
Woody fibre.....	11.00
	100.00

It is twelve years since I established these proportions.

(§ 8.)—The Creole or crystalline cane (cane of Malabar) was pressed in the same little mill; its juice had a density of 1.079; it marked 9°5 of Baumé according to Professor McCulloh. We still find the professor at fault. 1.079 density corresponds to 10½° of the *pese-sirop* of Baumé.

Under the most ordinary circumstances, this cane contains per cent :

Juice.....	91.00
Woody fibre.....	9.00
	100.00

The error made by Professor McCulloh is 3½ per cent. Since, according to him, this cane contains :

Juice.....	86.50
Woody fibre.....	13.50
	100.00

Let us pass to his third experiment.

(§ 9.)—The cane of Tahiti was submitted to the same treatment as the two preceding varieties. The juice obtained had a density equal to 1.0875, or, according to Professor McCulloh and his instrument, it marked 10°5 of Baumé. The same error is again made here; 1.0875 density equals 11¼° of Baumé.

Cane juice of this quality is composed of :

Crystallizable sugar.....	20.92
Salts and organic matters.....	40
Water.....	78.68
	100.00

According to Professor McCulloh, this cane contains per cent :

Juice.....	85.67
Woody fibre.....	14.33!
	100.00

Errors increase in magnitude as we advance. According to the experiments made by me and those made by Mr. Peligot of Paris, this cane contains per cent. in weight :

Juice.....	90.00
Woody fibre.....	10.00
	100.00

The error committed here by the professor is 4.33 per cent. This is not a laughing matter; but I would observe, that it is not possible to push negligence further.

The professor does not tell us if he has passed the canes in any mills of the Island of Cuba, in order to ascertain the quantity of juice which these mills can express of a given weight of canes; this was

nevertheless of great importance. At page 46, paragraph 14, he tells us *that he believes* that we obtain about 60 of juice for 100 of cane. But he does not speak positively. Nevertheless, if the experiments made by the Professor of Chemistry at the University of Havana are correct, the planters of Cuba are far from obtaining this result. I will give you the experiments of Professor Casaseca on this subject :

RIBBON CANES.

100 ribbon canes, passed in a water-mill upon the *ingenio Alexandrio*, belonging to Count O'Reilly, have given :

Juice.....	45!
Begasse.....	55

CREOLE, OR MALABAR CANE.

100 Creole canes, passed in a mill moved by steam upon the *ingenio Economica*, belonging to Don Pedro Diago, have given :

Juice.....	35!!!
Begasse.....	65

100

CANE OF TAHITI.

100 canes of Tahiti, passed in a mill moved by oxen upon the *ingenio Coca*, belonging to Don Ambrosio Romero, have given :

Juice.....	56
Begasse.....	44

100

TAHITI CANE.

100 canes of Tahiti, passed in a water-mill upon the *ingenio Rollanda*, belonging to Don Lorenzo Montalvo, have given :

Juice.....	57
Begasse.....	43

100

If this is the progress that the planters of Cuba have made in the sugar business, but especially in the extraction of juice, as Professor McCulloch tells us, we can show him that the Louisiana planters are not behind him on this point. We have the advantage of knowing Professor Casaseca; we know also the plantations upon which these experiments were made. I will by and by explain to you how Professor Casaseca fell into mistakes in making the above experiments.

PRODUCE OF THE CANE-JUICE BY THE AID OF CYLINDER PRESSES
MOVED BY STEAM IN LOUISIANA.

The five following experiments were made upon five varieties of canes, with a horizontal mill, moved by a steam machine from West Point, of 16 horse power—a first-rate mill.

The mill was left in the same condition as when it performed its daily work; the weighed canes were placed upon the *porteuse* in the same manner and of the same thickness as this last was accustomed to be used. The five experiments were made upon the plantation of Mr. V. B. Marmillion, the 25th November, 1842.

I report with confidence these five experiments, because they were made with the greatest care.

1st—Ribbon or Java Canes.....	1000 lbs.
Juice expressed.....	631
Begasse.....	369 that is, 63 per cent.
	1000

The density of this juice was 1.059.7—it marked 84° by the pese-sirop of Baumé.

2d—Violet Canes of Java.....	1000 lbs.
Juice expressed.....	360
Begasse.....	370
	1000 63 per cent.

The density of this juice was 1.061.5—it marked $8\frac{1}{2}$ of Baumé.

3d—Grey Canes.....	1000 lbs.
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This variety of canes is found mixed with the ribbon canes upon all the plantations, but it constitutes a distinct variety.

Juice expressed.....	640 lbs.
Begasse.....	360
	1000 64 per cent.

The density of this juice was 1,056—it marked $7\frac{3}{4}^{\circ}$ of pese-sirop of Baumé.

4th—Otaheite canes.....	1000 lbs.
Juice expressed.....	658
Begasse.....	342 66 per 100.
	1000

The specific gravity of this juice was 1,0615—it marked $8\frac{1}{2}$ Baumé.

5th—Malabar, or Creole canes.....	1000 lbs.
Juice expressed.....	677
Begasse.....	323 very near 66 per 100.
	1000

The specific gravity of this juice was 1.065—it reached 90 with the pese-sirop of Baumé.

These two last varieties of canes are less hard to express than the three preceding, which are always more ligneous.

You thus see that you can obtain in Louisiana from 64 to 65 per cent. of cane-juice with a sixteen horse power engine. I could mention other experiments made for the same purpose in other mills, which experiments have clearly demonstrated that a large number of planters in Louisiana obtain from 63 to 64 per cent. of juice. But, sir, if you think that I consider this result as the perfection of labor, you deceive yourself. No, the planters can exceed even this; they can easily obtain on an average, and without trouble, from 72 to 75 per cent. of cane-juice.*

* It was after many years of enormous loss of juice, occasioned by a bad system of expression, that I proposed, six or seven years ago, this second mill. Good advice is not always followed. I invite those planters who are still in doubt to consult on this subject Mr. Lapice, in the parish of St. James.

In making the above mentioned experiments, there are certain indispensable conditions to be observed. You can extract with the same mill without interfering with it in any way, sometimes 55, sometimes 60, and sometimes 65 per cent. of cane-juice, and sometimes more than this. This depends on the quantity of canes which you bring under the cylinders at the same time, and persons unaccustomed to this species of experiment are very apt to fall into error.

Another condition, and by no means a less important one, is that the cylinders of the mill make no more than four revolutions a minute. To a mill which is not very tight, if you convey but a small quantity of cane at a time, these canes will not be well pressed, especially if they happen to be hard. A trial of this kind will not give an exact idea of the quantities of juice susceptible of being extracted out of a hundred canes by this mill. The sugar planter who consumes daily a large quantity of cane-juice, ought not to tighten his mill; but if he wishes to have a good pressure, he must load very heavily the *portuse*. The canes arriving "*en masse*," press one another, and the result is the same when the mill is very tight, but with the difference, that by this means and by a single pressure you obtain a large quantity of cane-juice which is impossible when the mill is very tight. In both cases the pressure may be equally good; and a mill disposed of as above mentioned, which can give easily, in twenty-four hours of labor 30,000 gallons of juice, the cane being well pressed—(64 per cent.) would not yield one half of the quantity if it was very tight, and the pressure would not be superior.

There is at this time on the plantation of V. B. Marmillion, in the parish of St. John the Baptist, a mill from the foundry of Niles, of Cincinnati, which can yield 2,000 gallons of juice an hour; making 48,000 gallons in twenty-four hours, and that, too, without any extraordinary exertion. With this mill Mr. Marmillion obtains from 64 to 65 of cane-juice by one single pressure. In the West Indies, where the juice marks on an average 11° Baumé *pesc-sirop*, a mill of this force could very easily furnish cane-juice in a sufficient quantity to make 5,000 lbs. of sugar in its raw state, and completely drained. I saw at the residence of Don Justo Contero's plantation, Trinidad de Cuba, a mill worked by a twenty horse-power engine, which yielded 48,000 gallons of cane-juice in twenty-four hours; and there are in Louisiana a great number of mills of that power.

In paragraph 11, page 28 of his report, Professor McCulloh gives us a specimen of his *modus operandi* to ascertain the proportion of crystallizable sugar contained in cane-juice of whatever quality. We will lay before you the exposition of his method in his own words.

ANALYSIS OF OTAHEITE CANE JUICE.

(§ 11).—"Five ounces of fresh cane juice just from the mill, of the specific gravity 9° Baumé, were weighed exactly, and to this one ounce of a solution of sub-acetate of lead was added, which caused an abundant precipitate to be formed. After standing one hour to settle, the clear liquid was decanted carefully, and alcohol poured upon the precipitate, that it might be filtered. The filtration was performed readily, and the filtered alcoholic liquid was of a beautiful transparent yellowish green color, indicating that the alcohol had dissolved some coloring

matter. With iodide of potassium the filtered liquid gave an abundant precipitate of iodide of lead, showing the sub-acetate of lead had been used in excess. The washed precipitate, dried over a lamp on wire gauze, was found to weigh 0.049 ounce; and when incinerated in a porcelain crucible, it yielded 0.0206 ounce of protoxide of lead. Hence, five ounces of this cane juice, give, with sub-acetate of lead, a precipitate containing 0.0284 ounce of extractive matter, which amounts to 0.568 ounce in 100, or rather more than half of one per cent.

(§ 12.)—"Of the same cane juice, specific gravity 1.0843, one hundred volumes were mixed with three volumes of a solution of sub-acetate of lead, and the mixture was then filtered; (dans quelles proportions était sous acétat de plomb ?) after filtration, the liquid remained of an olive tint, and sub-acetate of lead gave with it a slight mucilaginous precipitate, which floated instead of subsiding, showing the saturation incomplete. Neither iodide of potassium nor sulphuric acid could detect in it a trace of lead. Filtered through fine bone black, with which it had previously been gently heated, it became colorless, and sufficiently transparent for optical examination, to which it was then subjected with the following results:

(Comment le sous-acetate de plomb a-t-il agi sur son jus de canne ? Le Professeur se garde bien de nous l'expliquer.)

$$\begin{array}{ll} d = 1.075; & t = 27.6^{\circ} \\ a = 29^{\circ}; & e = 0.97 \\ a' = -9^{\circ} 5; & n = 0.9 \end{array}$$

Hence,

$$\begin{array}{ll} \text{Log. } a \dots 1.46240 & \text{Log. } (1 - |r'|) \dots 0.13481 \\ \text{Log. } n \dots 1.95424 & \text{Log. } a' \dots 1.41664 \\ \hline \text{Log. } a' \dots 1.41664 & \text{Log. } (1 - |r'|) a. c. \dots 1.86012 \\ \text{Log. } a' \dots 0.97772 & \text{Log. } S \dots 1.41157 \\ \hline \text{Log. } r' \dots 1.56108 & \end{array}$$

$$x = \frac{S}{132.79 d}$$

Hence,

$$\begin{array}{ll} \text{Log. } (132.79) \dots 2.12316 & \\ \text{Log. } a \dots 0.03141 & \\ \hline & 2.15457 \\ \text{Log. } S \dots 1.41157 & \\ \hline \text{Log. } x \dots 1.25700 & \end{array}$$

"Therefore, $x = 0.1807$, and hence this cane juice contains 18.07 per cent. of crystallizable sugar.

We may therefore regard the juice examined as composed of:

Water,	81.36
Crystallizable Sugar,	18.07
Extractive Matter,	0.57
	100.00

"The preceding calculations, in which the Log. a' exceeds slightly Log. S , would indicate a trace of some other light polarizing substance besides cane sugar; but, as these numbers differ only in the third place of decimals, the variation is within the limits of errors of observation. With Trommer's copper test I obtained only the blue color for cane sugar, and no reduced oxide of copper. Hence, I conclude, that ripe cane juice, when fresh, contains only crystallizable sugar.

(§ 13.)—"To confirm the above results of optical analysis, I placed in a porcelain crucible, weighing 0.572 ounce, a portion of the same cane juice, which weighed, together with the crucible, 1.56725 oz., hence 0.99525 was the weight of the juice. This juice was then gently evaporated over a spirit lamp to a thick sirup, after which it was placed in the oven used for drying the clayed sugar, and allowed to remain there twenty-four hours, when it was taken out and found to be quite solid and dry. To expel any remaining moisture, I again heated it gently over a spirit-lamp, and then weighed it; the weight of the crucible and its contents was 0.75816 ounce, and therefore, 0.99525 ounces of juice yielded 0.18616 of dry solid matter. Hence, we have as the composition of this cane juice:

Water, ...	81.3
Solid Matter, ...	18.7
	100.0

a result which agrees perfectly with that obtained optically, and which this experiment was designed to test, by a ruder but less abstract method; but which result differs somewhat from that obtained by M. M. Peligot and Casaseca, who give 79 per cent. of water and 21 per cent. of sugar as the composition of Otaheite and creole cane juice."

Otaheite cane-juice, subjected to the above mentioned experiment, marked 9° Baumé; its specific gravity 1.0843! And this the professor himself tells us! There is, beyond all doubt, a gross error here, which engenders many others. At § 6, page 26, the professor informs us that a quantity of cane-juice, of the specific gravity 1.085, corresponded to 10° Baumé of the instrument *he employed*, but to 11° Baumé as indicated by another instrument. On this occasion he tells us that cane-juice, of specific gravity 1.0843, marked 9° Baumé *pese-sirop*. What is the meaning of all this disorder—of all these contradictions?

Cane-juice of 9° Baumé *pese-sirop*, corresponds to a specific gravity of 1.065—a similar juice contains 16 per cent. of crystallizable sugar.

Cane-juice, of the specific gravity 1.0843, corresponds to 11½° Baumé *pese-sirop*! A similar juice contains 20 per cent. of crystallizable sugar, all saline and organic matters being deducted; and you will perceive that by his analytic process, Mr. McCulloh only makes out 18.07. The error is gross.

Professor McCulloh considers the juice submitted to this examination as being composed of

Water, ...	81.36
Crystallizable sugar, ...	18.07
Extractive matter ?	0.57
	100.00

What is this *extractive* matter? Where are the sulphs. of potassium, of lime, of magnesia, etc? I will state hereafter.

Where are the organic matters—albumen, *pectine* and others, which he mentioned before? Did these matters have no existence in the cane-juice which he examined by the new method? What ought we to think of such an analysis? Of what use is this long string of logarithms, of the optical examination, and the re-agent of Trommer, if we are led into error—if this method is infinitely more defective than the old one? For all the chemists in the world have confidence in the latter.

This method (that is, the one *used* by Professor McCulloh, for it is not his own) is remarkable for its elegant and seducing simplicity. This cannot be denied; and persons having only a superficial knowledge of mathematics, and who are ignorant of chemistry, will readily yield to its influence, because they see an algebraic formula applied to a chemical analysis. But we must beware, and fortify ourselves against all this species of seduction.

The other analyses of Professor McCulloh are all of the same description.

22. In order to separate the foreign matters, the professor pours a solution of acetate of lead in his cane-juice with the intention of separating the *extractive matter* from it, because he firmly believes that his only concern is *extractive matter* and a *solution of sugar* in the water. The acetate of lead, according to his idea, combines with the *extractive matter*, and has no action on the sugar. The whole is thrown on the filter; he collects the precipitate, washes and dries it. *Heaven knows* in what manner he performs this operation. After this he finds that his precipitate weighs 0.049 ounces; he incinerates it in a porcelain crucible, and discovers that the residue weighs 0.0206 ounces, and that it is *only protoxide of lead*! The *extractive matter* has disappeared. He does not mention whether he deducted the weight of the ashes proceeding from the filter. But independently of the organic matters, the professor did not perceive that his precipitate contained phosphate of lead, sulphate of lead, chloride of lead, oxide of iron, manganese, *silica*, etc. All these come under the denomination of *extractive matter*! Another objection presents itself. The professor was not aware, as I had occasion to remark, that his cane-juice—that cane-juice on which he operated, contained phosphate of lime, phosphate of magnesia, sulphate of potassium, and chloride of potassium; and the result was, that the acetate of lead which he added to it decomposed those several and different salts, and replaced them by acetate of lime, acetate of magnesia, and acetate of potassium, which salts remained in solution in the filtered cane-juice, which he says contained nothing but sugar! But it is evident that the above salts formed a constituent part of his sugar! And after a series of most laborious calculations, overloaded with logarithms, he arrives at the conclusion, that a juice of the specific gravity of 1.0843, contains 18.07 per cent. of crystallizable sugar!

I shall now proceed to lay before you the old method, which I use myself, to ascertain the richness of cane juice or of any sweet liquid whatever, and also to ascertain the specific gravity of any other bodies, whether liquid or solid.

In order to ascertain the richness of a sirup or of any saccharine liquid, it is necessary in the first place to determine its specific gravity. This must be taken exactly, and as much as possible between 4 and 5° of the centigrade thermometer. If the atmospheric temperature was of 15, 20, 25° or more, this difference must be corrected by calculation, or the temperature of the liquid must be reduced artificially to 4° centigrade, or 40° Fahrenheit.

For example, in a solution of pure sugar of the specific gravity of 1.0615, or of 1.061 grammes to the *litre*, I begin first by ascertaining the quantity of cubic centimetres of sugar contained in this liquid, and I represent this quantity by x .

The specific gravity or density of pure sugar = 1.606; that is, a cubic decimetre of sugar, supposed to be pure and without interstices, weighs 1.606 grammes; an equal volume of water weighs 1000 grammes at 4° centigrade.

From these data, I establish the following equation:

$$\frac{1.0615}{x} = \frac{1000}{1.606} \times \frac{1000}{61.500}$$

$$x = \frac{61.500 \times 1.606}{1000} = 101.4 \text{ cubic centimetres of sugar, what will the } 1000 \text{ cubic centimetres of tried liquid?}$$

Composition in volume of 1000 cubic centimetres of a solution of sugar at 1.0615 grammes:

$$\begin{array}{rcl} \text{Sugar,} & = & 101.4 \text{ cubic centimetres,} \\ \text{Water,} & = & 1000 - 101.4 = 898.6 \\ & & \underline{1000.0} \end{array}$$

Composition as regards weight of this same *litre*, of a solution of

$$\begin{array}{rcl} \text{Sugar at } 1.0615 \text{ grammes,} & & \\ \text{Water} & = & 898.6 \text{ cubic centimetres} = 898.6 \text{ grammes,} \\ \text{Sugar} & = & 1.0615 \times 898.6 = 953.6 \\ & & \underline{1000.0} \end{array}$$

that is the weight of the litre of the solution of sugar.

This saccharine liquid contains per hundred, in weight—

$$\begin{array}{rcl} \text{Sugar,} & & 15.350 \\ \text{Water,} & & 84.650 \\ & & \underline{100.000} \end{array}$$

By acting on a solution of pure sugar at any specific gravity, and in following, step by step, the above method, you succeed in finding the per centage of the sugar with the most rigorous exactness.

In making the application of this formula to a sirup made of any cane-juice whatever, and to ascertain the quantity of sugar it contains, either the weight or the volume given, it is necessary to deduct the weight of the saline and organic matters contained in this sirup, which matters vary in proportion to the quality and the nature of the cane-juice employed. This experience alone can teach.

If I apply this formula to a cane-juice of good quality marking 84 Baumé *pescé*-s, of specific gravity 1.0615 (Louisiana cane-juice,) I find that the matters in solution giving the specific gravity to this juice exists there in the proportion of 15.35 per cent.

On the other hand, knowing by analysis that the proportion of saline inorganic matters is of 6.75 per cent. in a juice of the same specific gravity, by the difference I establish the composition of this juice:

$$\begin{array}{rcl} \text{Crystallizable sugar} & & 14.63 \\ \text{Salts and organic matters} & & 67 \\ & & \underline{15.35} \\ \text{Water} & & 84.65 \\ & & \underline{100.00} \end{array}$$

At page 28, § 11 of his report, Professor McCulloh informs us that a juice of the specific gravity of 1.0843 determined by his method, contained per 100 in weight :

Water.....	81.36
Crystallizable sugar.....	18.07
Extractive matter ?.....	0.57
	100.00

23. In applying the method just described to this juice; of the specific gravity of 1.0843, and which is beyond all doubt more exact than that used by the professor, we find it to contain :

Water.....	79.396
Crystallizable sugar.....	20.179
Saline and organic matters.....	425
	100.000

The error in this instance is more than $\frac{2}{10}$ in the richness in sugar ; and to make similar mistakes it is not necessary to be a chemist. Another specimen of the manner of arriving at a chemical analysis by Professor McCulloh.

Let us permit him again to explain his method in his own language, page 36, paragraph 31.

ANALYSIS OF SOME OF THE FECULENCIES CONTAINED IN OTAHEITE CANE-JUICE.

(31).—"For the purpose of ascertaining what is the nature of the greater part of the feculencies contained in cane-juice, and which separate by gentle heat alone, I took a portion of the same from the clarifier, heated to 140° Fahrenheit, and subjected it to analysis, with the following results :

"The feculencies, as taken from the pan, were partially dried by exposure to the air, but they were so retentive of moisture that I found it impracticable to dry them thoroughly without heat, which would probably change the combinations of their elements, and was therefore avoided ; and when mixed with water, they formed a mucilaginous mass which could not be filtered. A portion of the still moist feculencies being then carefully weighed, was thoroughly washed with alcohol of the strength of 95 per cent., and the mixture subjected to filtration on a counterpoised filter. The solid matter in the filter was gently and freely washed with fresh alcohol, after which is formed a perfectly dry mass, and was equal in quantity to 11.04 per cent. of the original matter treated with alcohol. By evaporation of this alcohol it yielded 1.64 parts of cerosie, and a small portion of an essential oil ; it had therefore taken up 87.32 parts of water. Hence, the scam examined is composed of 87.32 per cent. of water, and 12.68 per cent. of dry matter. From these results, united with those of an analysis of the portion insoluble in strong alcohol, I obtained, as the composition of the 12.68 per cent. of dry matter in feculencies, which separate from Otabeite cane-juice by heat alone—

1.—Woody fibre,.....	70 5
2.—Albumen,.....	14 0

How strange ! how did the professor perceive that this was albumen only ?

3.—Cerosie,.....	12 9
------------------	------

Cerosie being entirely insoluble in alcohol, the professor has mistaken chlorophylle for cerosie !!!

4.—Silica,.....	13
5.—Phosphate of Lime,.....	11

There was also phosphate of magnesia with the phosphate of lime ! but this the professor did not see.

6.—Oxide of Iron, ...0.2

Oxide of manganese was also mixed with the oxide of iron—but the professor was equally blind.

7.—Essential Oil,.....a trace.

100 0

It is less than nothing—it requires extraordinary vision to perceive it.

This is what is called *bâcler*, a chemical analysis.

The oxide of iron spoken of by the professor in this case, does not issue from the cylinders of the mill as he supposes. The iron in the state of combination has its existence in the bark of the cane, and even in the juice of all the varieties of cane. How could he arrive at a correct idea of the constitution of the feculencies of cane-juice, when he asserts that he collected them before the ebullition of the juice? At that time he had only a part of the feculencies, and it is with this portion of them that he gives us a specimen of what he denominates an analysis!!!

Furthermore, how could the professor expect to find alkaline salts in these feculencies, since the cane-juice, however rich it may be, is always acid, and owes this peculiar acid quality to the presence of the phosphate of lime.

In the examination which he made of three varieties of cane-juice, in the island of Cuba, the professor passes over in silence the saline matters which exist in the juice of all canes, in greater or less proportions, according to the climate where they are cultivated, and at all the periods of their growth. In the cane, the formation of the salts always precedes the formation of the sugar. The cane-juice which he examined in Cuba, contained from 3 to 4 parts in the thousand of these saline matters; that is, consisting of salt of lime, salts of potassium, of magnesia, &c. How does it happen that they escaped his observation? If Professor McCulloh will take the trouble of making *chemical investigations* on the cane of Louisiana, he will meet with these saline matters in a much greater proportion than in the cane of the West Indies; for this reason, the riper the cane is, the less it contains of these matters. If he wishes to try the cane at all, the joints, in November, for instance, the period or time of grinding, he will find that the juice of the top of the cane contains these saline matters in a proportion of 3 and 4 times greater than the juice taken at the bottom; and that the juice taken from the middle of the cane will yield a very nearly average contents of saline and organic matters.

Allow me, sir, to give you, in a few words, an idea of the proportion of saline matters which are found naturally in the cane-juice.

I remarked, and in this opinion a great number of planters coincide, that the specific gravity of cane-juice in Louisiana is on an average of 1061.5; that is, that this juice corresponds to 8½, or thereabouts, *Baumé pèse-sels*—it is oftener less. I therefore consider 8½ as a fair average.

A gallon of cane-juice, of this specific gravity, coming from the mill,

Contains about.....	17 grammes, 28 cent. of saline matters.
Organic matters.....	7 " 87
Together.....	25 grammes, 15 cent.

1000 gallons of this same juice, of the specific gravity of 1061.5, contains,

Saline matters.....	17 kilog, 283 grammes.
Organic matters.....	7 " 870 . "

Total..... 25 kilogs. 153 gr. or 55½ lbs. A. W.

In the cane-juice of a high degree, namely, of a specific gravity of 1073 to 1093, (cane-juice of the West Indies,) the saline matters, as well as the organic matters, are in a much inferior proportion.

By the use of lime-milk in the defecation of the sugar, nearly one-third of the foreign matters are separated; all the other saline matters are concentrated in the sirup; they are met with again in the molasses and in the raw material.

A portion of the acid phosphate of lime, the phosphate of magnesia, the hydrated silica, a portion of the soluble organic matters, are removed by the defecation through the milk of lime; all these matters, in a great measure, ascend with the green feculencies. After having been purified by this milk of lime, 1000 gallons of this same juice retains:

Divers salts.....	14 kilogs. 758 grammes.
Organic matters.....	3 " 164 "

Total..... 17 kilogs. 922 grammes = 39½ lbs.

These 39½ lbs. of organic and saline matters, necessarily are found in the *cuite*. If the defecation was perfect—if the acid phosphate of lime, the phosphate of magnesia, the hydrated silica, the organic matters, could be completely removed by the milk of lime, there would remain about 12 kilogs. = 26½ of salts of potassium and other matters, in 1000 gallons of cane-juice of the specific gravity of 1061.5, after complete defecation. But it is not possible to introduce the quantity of lime-milk sufficient for the complete defecation, without serious injury to the fabrication, and to the quality of the article; of this, every sugar planter is perfectly aware.

If the sugar planter always obtains molasses, and in large quantities, he must attribute this to the presence of the saline matters. I say this, for the most part, the poorer his cane-juice is, the more molasses he collects: because, cane-juice of a poor quality contains a greater proportion of saline matter than a juice of a greater specific gravity. There are, however, some rare exceptions, to which it is useless to allude. The vacuum apparatus, and the new methods which have been carried to the greatest perfection, are not competent to obtain all the crystallized sugar.

If the cane-juice did not contain saline matters, it would be easy to crystallize *all the sugar it contained*; especially by operating in *vacuo*, and in filtering bone black, because the cane-juice, (juice coming from a ripe cane,) contains crystallizable sugar only.

The saline matters, especially the salts of potassium of lime, are always an insuperable obstacle to the total production of the sugar contained in the cane-juice. These matters are not only prejudicial to the crystallization, but they react on the crystallized raw material, and cause a portion to deliquesce during the draining. It is only by liquoring or by *terrage* you can separate these matters from the sugar. If I were called upon, I could demonstrate, that the sugar (raw material) of Louisiana, contains on an average about one half pound of saline matters per gallon; that the whole quantity of molasses furnished by the draining of one hogshead of raw sugar, contains very often from 25 to 30 pounds of those matters; and that the *raw sugar* is always impregnated with the same matters. In unfavorable seasons, when the cane-juice marks 7° or $7\frac{1}{2}^{\circ}$, this proportion is increased. I have seen, on several occasions, that the *cuite* required to fill a hogshead, which, with complete draining, will weigh 1000 pounds, contained more than 70 pounds of saline matter. This depends on the quantity of cane-juice employed to attain 1000 pounds of raw sugar. Two-thirds of these saline matters run out with the molasses, the other portion remains in the raw sugar, and tends incessantly to drain the sugar, & to cause it to deliquesce.

The facts which I have placed before you, have not yet been understood by all the planters. When they do understand them perfectly, the state, or rather the planters in a body, can offer a reward of \$100,000 to the person who will devise means for the total removal of these matters, previous to the crystallization of sugar; and then only, will there be no molasses.

It will be not only one of the most magnificent discoveries in chemistry, but one of the most useful; the services rendered the planters would be incalculable, and could not be too highly compensated.

To execute this work, and to render it tolerable, the march of professor was traced out. It is unfortunate for himself, and a matter of regret for the persons interested in this subject, that he not follow the beaten track, without engrafting any of his own notions and ideas. He had at hand all the discoveries and inventions made on this subject for the last twelve years. From sources, he could have collected materials which would have enabled him to have written a tolerable book, and one which have answered the purposes of the American government; events, his report would have been less defective.

In 1842, Admiral Dupersé, at that time Minister of the Navy of the Colonies, entrusted to a chemist a similar work. The French chemist, although a man of distinction in his profession, did not fulfil his mandate to the general satisfaction. But, at least, he had undeniable proofs of his extensive knowledge of chemistry;—his report containing new ideas and ingenious facts. For these, you would look in vain in the work of the American chemist. This proves to us clearly, that works undertaken by order of government—*works ordinarily well paid*, are not always the best executed.

Professor McCulloh is, nevertheless, a great partisan of *new and improved apparatus*, especially those of Billieux and Derosne. In his report, he cites their plans with great warmth. The sugar planters who may have entertained a slight desire of using the one or the other, will find a most captivating tableau—an infallible way of making a rapid fortune. According to Professor McCulloh, the advantages offered by the usage of these apparatus, are so mighty and important, that every planter who has the slightest trace of common sense, must renounce at once the use of *sugar frying-pans*!!

Those, however, who on this subject are sceptical, must beware of taking any rapid step; for, in my opinion, it has never been *clearly demonstrated*, that the manufacture of *white sugar* was more profitable and more advantageous to the planter, than the manufacture of the *raw material*. Experience alone can teach us this; and since this question has never been solved, let us remain in *statu quo*. If the information which has reached me on different occasions is correct, those who have inconsiderately abandoned the old process, and adopted these wonderful apparatus, often regret their change; or, according to the *picturesque* expression of the enthusiast, their "*sugar frying-pans*."

From page 59 to 64, Mr. McCulloh exposes his own ideas on the defecation of the cane-juice; the paragraphs 31 to 37 are very explicit on this subject. But they clearly demonstrate that the theory of defecation by the use of lime, or by a milk of lime, is as yet unknown to him, since he is unable to explain the action which this *alcoli* exercises on the cane-juice, and on the matters contained in the juice. This, according to his ideas, amounts next to clarification.

In an article inserted in your Commercial Review, vol. 2, page 335, in the year 1846, written by a distinguished lawyer of New-Orleans, we find an explanation similar to that of Professor McCulloh; but the author not being a chemist, it was not at all astonishing he did not understand, and could not explain, the action of the lime in this operation. Errors and faults so glaring are willingly overlooked in this case, but they cannot be tolerated in a Professor of Chemistry.

Ribbon cane-juice, on leaving the mill, contains :

- | | |
|--|--|
| 1. Water. | 10. Albumen. |
| 2. Sugar. | 11. Caseine. |
| 3. Acid, Phosphate of Lime. | 12. Gluten.. |
| 4. Phosphate of Magnesia. | 13. Matter having an analogy with Hydrate of Carbon. |
| 5. Sulphate of Potasse. | 14. Chlorophylle, united to a weak portion of unctuous matter. |
| 6. Chloride of Potasse. | 15. Ceroise. |
| 7. Hydratide of Silica. | 16. Cellulose, or remains of fibrous matters. |
| 8. Saline combinations of Iron and Manganese. (These last in very weak proportions.) | 17. Carbonic Acid. |
| 9. Organic Salts of Potasse. | |

I have found in certain cane-juice, in 10 litres, (2 galls. 642,) at times, 8, 9, 10, 12, 15, and 20, up to 30 grammes of phosphate acid of lime and magnesia.

All these matters may vary considerably in their proportions, according to the density of the juice of the cane, and according to the height

at which the juice is taken in the same cane, especially before its maturity. The canes grown in new land contain saline and organic matters much stronger in proportion than those collected in old ground to an equal density of juice. The climate or the latitude in which the cane is cultivated, also makes an immense difference in the proportion of all these matters.

The cerosie and fibrous matters detached by pressure, are found in greater or less quantity as we take the juice in going from the mill or after having deposited it.

The juice of the violet and ribbon cane contain cerosie in a much greater quantity than the other varieties of the cane.

The foregoing giving us a pretty good idea of the constitution of the juice of the cane, let us now observe the action of lime upon liquid sugar. In order to arrive at this end, I take lime made with white marble, that is to say, of pure lime, and I assure myself beforehand that this lime contains nothing else but lime; that is, of the oxide of calcium. With this lime and distilled water I make pure lime-water, and filter it.

I take then a determinate volume of the juice of the ribbon cane, of the density of 1061.5, marking $8\frac{1}{2}^{\circ}$ by *pese-sel* of Baumé, (the medium density of the cane-juice of Louisiana.) I add to this cane-juice water of lime filtered until precipitation has ceased; I act upon it cold. I decant it, I collect the precipitate in a filter, and examine what it contains, of what it is formed. After necessary operations, and which it would be too long for me to detail, I find that the precipitate determined by the lime water in the cane-juice is formed of:

Sub-phosphate of Lime.	Oxide of iron and Manganese in very weak proportions.
Phosphate of Magnesia.	Chlorophylle united to a little fat substance.
Carbonate of Lime.	Cerosie.
Albuminate of Lime.	Cellulose and other particles of the tissue of the cane.
Caseine and Gluten combined with Lime.	
Silica.	

If it were necessary to show in what proportions these substances are found in the cane-juice in all possible degrees, and at all epochs of the growth of the cane in Louisiana and elsewhere, I could satisfy you upon this point.

I was the first to make known, about ten years ago, that the juice of all varieties of cane at all periods of their growth contains:

Phosphate Acid of Lime.	Organic Salts of Potash.
Phosphate of Magnesia.	Gluten.
Salines, combinations of iron and Manganese.	Cerosie.

and I do not believe that it is possible to be furnished with a single proof to the contrary. The chemists who had examined the cane before me, had only detected sulphate and muriate of potash, chlorophylle and albumen vegetal.

When I announced the presence of phosphate of lime and magnesia in the cane, it was at first denied, because people always begin by denying. It was said to be impossible, because such or such a

one had not observed the fact; then they kept quiet for a time; after that it was supposed or alleged I was mistaken. Finally they began to see a little more light, and ended by acknowledging I was right.

It is evident to me, sir, that all these substances which I mentioned above were contained in the cane-juice I submitted to this treatment; but some of them did not exist in the state in which I obtained them. The phosphate of lime existed in the state of phosphate acid; that is to say, soluble. The lime water brought it to the state of sub-phosphate, and rendered it insoluble; it is the same with the phosphate of magnesia. The lime water can separate integrally the two salts from the cane-juice.

The lime kept in dissolution in lime water was combined with the carbonic acid existing in the cane-juice, and there resulted from it the carbonate of lime.

It (the lime) was also combined with the albumen and gluten, and carried them off in part from the juice of the cane in coagulating them. The other substances were carried off or separated by the action of the lime, either by decomposition or by rendering them insoluble.

The salts of potasse and other organic matters remain integrally in the juice of the cane; lime has not the power to form combinations insoluble with them.

The juice of the cane in its normal state does not contain particular acid, organic acid in its free state; the persons who advanced it were in error. It contains only a weak quantity of carbonic acid at the moment of pressing it.

If the juice of the cane, however rich it may be, is always acid to reactive paper, it owes this property to the presence of bi-phosphate of lime, which it constantly retains.

Let us not forget what we have just said above, sir; we will therefore recapitulate.

In the making of sugar, when I add milk of lime to the juice of the cane with the view to clarify it, there is an instantaneous decomposition of the acid phosphate of lime and the phosphate of magnesia. These two salts were contained in this juice. The lime which I add to it makes them pass to an insoluble state. They then appear in the form of grayish gelatinous flakes, slimed by the other organic matters existing in the juice of the cane, and the coagulation of albumen by heat takes place at the same time. The effect produced during this reaction is precisely similar to that which the refiner obtains in adding *finings* to certain sirups in order to clarify them. Persons who are not familiar with chemistry, who see albumen in jelly, and the sub-phosphate of lime recently precipitated side by side, would certainly take them for the same substance.

You see, then, sir, that the theory of defecation of the cane-juice by lime, or by a milk of lime, is not enveloped in so much mystery as they say. It is nearly ten years since I explained it, as I have just observed to you. Great truths have been sometimes disparaged, and even for a long time combatted. But they always end by triumphing over ignorance and prejudice.

In addressing you these remarks upon the chemical part of Professor McCulloh's report, my only object has been to show that this work is not without faults, and even great ones; that it does not deserve all the praise which has been lavished upon it; that it contains, on the contrary, numerous errors—errors which are not pardonable in a Professor of Chemistry. I am disposed to believe that the professor could have done better if he had brought to his investigation of the sugar cane more attention and research. Such research would require at least one year, because it is indispensable that he should examine the cane, and analyze it at all periods of its growth.

I have spoken above of quotations mutilated or disfigured by the professor. I will give you a specimen in which I am directly concerned, where he speaks of cerosie.

In paragraph 1st, page 22d of his report, the professor says: "Cerosie is a substance closely resembling beeswax, both in its appearance and its properties. It was discovered or first investigated by Mr. Avequin, of New-Orleans, who gave it the above name. A more full account of it, taken from Mr. Avequin's description and analysis, is given in the Treatise on Chemistry, both of Liebig and Dumas,* to which I therefore refer. The planter may, however, for all his purposes, regard it as wax."

Professor McCulloh gives here the description of a substance which he does not know, which he has never seen, and the properties of which he disfigures. The cerosie does not resemble, in any respect, beeswax. Cerosie may be considered as an alcohol, unique in its kind, since it is the only one which is found completely formed and in a state of purity in nature.

Its atomic formula is represented by $C.^{24} H.^{30} O = 24 (C. H.^2) + H.^2 O$.

Judge, then, of the exactness of the professor:

Ab uno disce omnes.—VIRGIL.

The professor would not believe that cerosie is an alcohol or an aldehyde, these substances have so little resemblance to each other.

Chapter I, from page 22 to page 36, contains the *chemical investigations* of Professor McCulloh. I have limited myself to showing you some of the errors in the first chapter, only the most striking, because it is not necessary to be a great chemist in order to detect them.

The chapters II and III, are, for the most part, only extracts from French and other authors, more or less mutilated, relating to practice and to new apparatus. Mr. V. Aime has pointed out some of the errors which they contain; but he has not said *all* upon this subject. I will return to this whole matter, if there be any occasion for it.

* Dumas—*Traite de Chimie*, vol. 6, page 699, Paris, 1843. Liebig—*Chimie Organique*, vol. 2, page 304, Paris, 1844. Gerhardt—*Precis de Chimie Organique*, tome 1, page 134, Paris, 1844.

"The facts that I have exposed in my letter, are due to my own researches on the sugar cane. I borrow nothing from those who have written on this subject. If I have committed some errors, they must be attributed to me alone.

Receive, sir, the assurance of the distinguished consideration with which I have the honor to subscribe myself,

Your ob't. serv't.

AVEQUIN.

Note by Editor.—The paper above has been but loosely translated, and is susceptible of great condensation and improvement, did time permit. The press, however, awaits it. Let not the reader be discouraged by the length, for the subject is one of very great importance to the sugar interests of our country, already so vast. Mr. McCulloh will consider us entirely disinterested in the criticisms we admit upon his work. Truth is the sole object of investigation. Where shall it be found? As the organ of the sugar interests of the United States, it becomes us to hear every side. If we permit the attack—we are ready to hear the defence.

As the proof of this article will neither be read by the author or editor, it is not improbable mistakes will occur in the scientific terms, &c., from the badness of the manuscript. The reader will correct such.

ART. III.—PRINTING AND PRINTERS.

THE printing-office has been called "the poor boy's college;" and there are many literary colleges in our country whose register of graduates would exhibit far less fruitful results. The daily pursuits of the youth engaged in acquiring the mysteries of the "*Ars Typographica*," are calculated, if not to awaken in him a thirst for knowledge, at least to store his mind with a mass of useful information. He becomes familiar with the current literature of the day, with the history, pursuits, and peculiarities of various authors; learns to discriminate between different excellencies of style, and often lays the foundation upon which he may, afterwards, himself rise to distinction. Not only to the Art of Printing, but to the practical professors of the art, is the literary and scientific world indebted for the advancement of learning.

Printing is said to have been known in China upwards of nine hundred years ago. In the time of Confucius, 500 B. C., books were formed of slips of bamboo, and about the tenth century printing was in general use. The first newspaper of which we read, was issued in manuscript at Venice in 1593, called the Gazette. During the same year, the "Geneva Bible," prepared by the refugees in the times of "Bloody Mary," was printed, and also a version of the Psalms, printed by John Daye, a relative of Stephen Daye, who introduced the first Printing Press in the United States. Previous to this time, (as far back as 1450,) we are informed of the publication of a Bible in Latin, eight years before the method of casting types in a mould was discovered.

The first attempt at printing with types is traced to engravings on blocks of wood. The honor of the invention is claimed by citizens

of three different cities—Harlæm, in Holland, Strasburg and Mentz, in Germany. Laurentius Coster, John Gutenberg, and John Faust, each claimed to be the inventors of the Art. As early as 1442, Gutenberg is said to have printed two small books in the city of Mentz. The Art was first introduced into England in 1471, by Wm. Caxton, and in 1500 it was known in between two and three hundred places. In 1593, the first printed sheet was published in England by "Her Majesty's Printer," but was not sent out regularly; another was published at Frankfort, Germany, in 1612. During the same century, the "London Public Intelligencer" was put forth, and several other journals of very singular titles, such as "The Secret Owl," "The Scot's Dove," "The Parliament Kite," &c.

Addison's *Spectator*, and The *Tattler* of Sir Richard Steele, were the first purely *literary* journals of which we have any knowledge. In dramatic literature, we have the first edition of Shakspeare's Plays, which were issued from the press between 1597 and 1623, A. D.

The "*Journal des Savans*" was the first Review in France, and was commenced in 1665. On the 24th April, 1719, the Boston News Letter appeared—the first in America. It is estimated that there are, at the present time, in course of publication throughout England, Ireland, Scotland, Wales, and the British Isles, *five hundred and fifty-five* journals, dailies, tri-weeklies, semi-weeklies, weeklies, semi-monthlies, and monthlies. The great majority of these are published in England. One of these journals was established in the year 1600; and previous to 1700, five more were put in successful operation. In the United States, there are nearly *two thousand*, over three times the number issued in Great Britain, and more than the whole number published in all other parts of the world together. In a single building at Boston, the publishers issued fourteen papers, employing the services of sixty-five persons, the labor of whom is estimated at \$27,000 per annum, and the cost of the paper, \$30,000 more.

Two journals, 8 by 13 inches, were printed at Camden and Claremont, S. C., just after the Revolution, one in 1786, and the other in 1833. A copy of each of these papers was lately exhibited at one of the printing offices in Charleston, the contents of which were indeed curious, as showing the state of journalism at that period. A line omitted in one of the communications is supplied by printing the words in the margin.

The State of Iowa, fourteen years ago, was the habitation only of its original tribes. It now supports 16 newspapers, democratic, whig, neutral, religious, and agricultural.

The following brief sketch will convey some idea of the business done in the splendid establishment of the Harpers, in New-York :

One of their buildings is five stories high, having five windows in each story across the row, and extends from Cliff-street to Pearl. Two other buildings join this on Cliff, and opposite on the same street are two buildings more, of vast size, in which the type-setting and stereotyping are done. There are 19 Adams and three Napier presses, worked by steam, which throw off 70 reams of paper per day—that is to say, 34,000 sheets—making 201,600 sheets per week, and 104,483,200 per year; which is equal to 1000 octavo volumes, of over 600 pages

each, per day, 6000 per week, and 312,000 per year. We understand that during the last year, the number of volumes, of all sizes, thrown off, was not less than 2,500,000. The fixtures in the bindery are valued at \$13,000. Here 52 barrels of flour are used per year for paste; of glue, 42 barrels; 750 packages of gold-leaf are used in the same period for lettering, ornamenting, &c. Here, likewise, are used 700 pieces of muslin, of 40 square yards each, and 60,000 of pasteboard. 14,400 sheep are slain per annum to supply skins for the establishment. In immense vaults beneath the establishment are stored 800,000 pounds of stereotype plates, valued at from 7 to 9 cents per pound. 800 pounds of metal are used weekly for casting, making 41,000 pounds per annum. In the composing-rooms are 80 to 90,000 pounds of type. The stock in trade is estimated at about \$2,000,000. They employ 400 persons, a little less than one quarter of whom are females. About sixteen hundred persons are supposed to depend upon this establishment. The sum paid to persons employed is about \$200,000 per annum. Messrs. Harper and Brothers have paid to authors immense sums of money. Stephens has received from them \$50,000; Prescott, \$20,000; and Dr. Anthon, too, must have received a fortune at their hands.

The Philadelphia United States Gazette sold for \$45,000. One-third of the New-York Courier, \$38,000; and one-fourth of the New-York Tribune, \$25,000. One-half of the Boston Atlas, \$35,000. The Boston Daily Advertiser is valued at \$90,000, and \$40,000 has been refused for one-half of it. The French Courier, published in New-York, sold the other day for \$50,000; and the Albion, we think, for \$25,000.

A few years ago, there was not a single English newspaper published in any part of the Pacific, nor upon the western coast of North or South America. Now its journals are extending over California, Chili, and the Sandwich Islands.

The Bible has been printed in 130 languages and dialects. The number of copies issued by the Bible Societies is supposed to be about *thirty millions*! Nearly one million and a half of copies have been printed in a single year, by the British and Foreign Bible Society alone. The American Bible Society are now printing at their establishment in Nassau-street, New-York, about 70,000 copies of Bibles and Testaments monthly, equal to \$40,000 annually, and yet are not able to meet the increasing demand.

The Religious Press in this country and in Great Britain, has been, and continues to be, a medium of the most widely extended operations.

The condition of the Cherokees in the west, is a most extraordinary encomium upon the agency which the Art of Printing has exerted in the promotion of civilization and refinement. These people have now a weekly newspaper, a Male Seminary, and a Female Institute in progress. A number of Tracts, Hymn-Books, Arithmetics, Spelling-Books, Primers, Almanacs, and copies of the Cherokee Alphabet, and the Constitution and Laws of the Nation, compose the articles deposited under the corner stone of the latter edifice.

A paper, in the Chinese language, has lately been established at Canton. The Pekin Gazette is published at irregular periods, and distributed throughout the empire; and the Mandarins consider it a matter of great importance to secure an early reading of the Gazette, in order that *they may be enabled to proceed in their official duties.* It is

the only medium through which they can arrive at any knowledge of the will of their sovereign. Express riders are always in readiness to carry the Gazette in different directions as soon as published. A high Mandarin, who is compelled to secure an early perusal of his paper, pays something like \$20 per month for the privilege—while those who are satisfied to wait, get off with \$2 per month—rates of subscription which, it is to be supposed, would pay the printer tolerably well for his trouble. It is said that several numbers of a Chinese journal, *printed on silk*, have been preserved in a library at Paris, the length of which is $10\frac{1}{2}$ yards.

An official report made by an English commissioner, respecting China and the Chinese, presents the following information respecting the literature of the Chinese:

"The Chinese are a reading people, and the number of their published works is very considerable. In the departments of morals, history, biography, the drama, poetry, and romance, there are no lack of writings, such as they are. The Chinese *Materia Medica* comprises forty octavo volumes; of statistical works, the number is very large. Their novels are said to be excellent pictures of the national manners. China is full of books; new authors are continually springing up; the press is active, and the traffic in books is a lucrative and most honorable branch of trade. When examinations take place in the capital or the palace, the most clever students are chosen to fill the office of book-makers. There are, however, few really new works, and all that appear are compilations and quotations; the author never venturing an idea of his own; and in this consists true learning, according to Chinese notions. There is one work in the royal library, on the topography of China, which is said to consist of 5000 volumes; some of the best translators that have had access to some extracts from this giant, were sadly disappointed, as it appears to be a mass of confusion, without any attempt at order or proper arrangement. There are numerous small treatises, similar to our tracts, gratuitously distributed by private individuals, inculcating morality and virtue. Printing is evidently cheaper in China than in Europe, when ten volumes, each containing 100 pages, can be purchased for less than a dollar. Every peasant and the poorest fisherman can read and write. Private and public schools are numerous in every province, and entirely independent of Government. Occasionally an examiner visits all schools to ascertain the qualifications of the teachers."

Hoe's last fast Printing Press was first introduced into New-York by the proprietors of "The Daily Sun," and is about to be introduced into Paris. The inventor has made contracts for building two of these presses, each capable of printing from 10 to 12 thousand copies per hour. The cost is over 120,000 francs, or \$24,000.

A printing press has been invented by a gentleman of New-York, which is calculated to print off 80 sheets in a single revolution of the cylinders, taking an impression on both sides of each sheet. The number of sheets which it is estimated that it will print in an hour, is not less than 20,000.

The restrictions upon the liberty of the press in France, which partly led to the recent developments of popular feeling in that distracted country, caused the suspension, during the reign of Louis Philippe, of 57 journals. In spite of the formal promise of the king, in his inaugural, that no further prosecutions should be instituted, the writers of these journals were sentenced to heavy fines and imprisonment. The Emperor of Russia does not venture to allow

American newspapers, and their liberal sentiments on the subject of civil and religious freedom, to be circulated among his fifty millions of *freemen* ! Among the list of foreign newspapers to which the privilege of admission is vouchsafed, we find 156 German, 103 French, 45 English, and 2 Polish, but not a single American sheet !

These things stand in striking contrast with the state of the Art in our own country, where every facility is extended, through low rates of postage and the use of the franking privilege, to the free circulation of newspapers, and the remitting of subscriptions to publishers, without any further expense or loss to the latter.

In the cost of advertising our merchants enjoy great advantages over those of England. There, a duty of thirty-five cents on every advertisement, inserted in a public journal, increases the total expense seventy per cent. on the amount charged for the advertisement.

The press, everywhere, begins to assert its independence, and the most despotic of rulers are compelled to acknowledge its claims. Perhaps one of the grandest results of the present revolutionized condition of nearly all Europe, will, next to the establishment of free institutions and governments, be the increased facilities which will be given to the advancement of education and literature, by the removal of all restrictions upon this great, this inestimable privilege of *freemen*.

There is no individual class of men to whom have been cheerfully accorded, by universal consent, more privileges, and at the same time more privations, than those whose business it is to supply the world, by the labors of their hands, with everything in the shape of knowledge and intelligence connected with the current operations of the day and age. The historian and the biographer are alike useful in their day and generation ; but the facts which they record for the information of future generations, are but second-hand repetitions of what the printer has already circulated to the world before him, only in a less systematic and more desultory form. In this respect, the latter is the most useful of the three.

A New-Orleans paper gives an account of five printers employed in a single office, four of whom have served their country on sea and land. One of these was an actor in the great battles of Palo Alto, Resaca de la Palma, Monterey, (where he lost an eye,) Vera Cruz, and Cerro Gordo ; another was at the storming of the heights of Monterey ; a third, served a year in Mexico against the robber bands ; a fourth, is an officer of our navy. One or two of them have lived among the chapparals of Mexico, the Cordilleras of South America, and the ruins of the earthquakes of Caraccas. On one occasion, General Scott wishing some general orders printed, ascertained that, in consequence of a scarcity of hands in the office to which they were sent, the work could not be accomplished in time. He then, on the morning of parade, ordered all in the ranks who were practical printers to step forward three paces in front, when *several hundred men—all printers*—obeyed the order.

The dignified Senate and House of Assembly have drawn a *post*
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tion of their resources from the typographical ranks. Senator Cameron, of Philadelphia, uses a letter-stamp, on which is engraved a printing-press, and over which is the motto, "*Persevere*."

Twenty-five years ago, this same senator was seen to enter a printing-office at Harrisburg, (Pa.,) with a small bundle of clothing slung across his shoulder, on a stick, asking for labor, whereby he might earn sufficient to support himself and indigent parents. He was taken as an apprentice to the business, served his employers faithfully, and finally graduated from an obscure printing-office to the Senate Chamber of the United States.

There are in the Pennsylvania Legislature twelve or fifteen printers, editors and ex-editors.

At the celebration of the birth-day of Franklin, at Boston, by the Franklin Typographical Society, there were three invited guests: Hon. J. T. Buckingham, Hon. S. T. Armstrong, (formerly Governor of Massachusetts and Mayor of Boston,) and N. W. Bryant, members of the Massachusetts Senate, who had been practical printers, as was also the orator of the day, C. C. Hazewell, who has also attained to some eminence as a political writer. One of the invited guests of the occasion gave an account of a printers' festival, which he had attended at Paris, where he had the pleasure of meeting Beranger, the printer-poet. At the Paris festival, police officers were stationed at each table to inspect the toasts, and see that no sentiments, disrespectful to the government, were uttered; and when, the next morning, a single journal was found to contain the proceedings, it was seized and burnt. This he gave in illustration of the superior liberty of the press in the United States as compared with other countries.

Senators Dix and Niles were also practical printers.

An editor mentions a printing-office which he often visited in his youth, in which were four journeymen printers. One of these is now a Member of Congress, one a clergyman, and another an editor. Three of them were hard students, and have attained to considerable distinction as scholars.

The associate editor of "The Literary World," (J. Bayard Taylor, Esq.,) was once an apprentice in a printing-office. After serving his time, he travelled over a portion of Europe, supporting himself in the mean time by his profession, and on his return published a volume of his travels.

Captain Donovan, who has written a book of Adventures in Mexico, was a printer. He became a volunteer, and was captured by the guerillas of Canales, was sold for seven hundred dollars to a Mexican editor, from whom, after having served some time as typesetter, his ingenuity and bravery enabled him to effect his escape.

George P. Morris, Horace Greely, Robert Sears and James Harper, are four eminent names of distinguished authors and publishers, who have risen to their present station from the daily routine of a printing-office.

Most of the early printers were men of profound learning. In the first stages of the Art its professors often wrote or edited the works which they published. Among the most celebrated of these

men were a family of Stephens's, who, for more than a century, astonished the world, both with their acquirements and the magnificent specimens of typography issued from their press. In the year 1557, one of them, Henry Stephens, published a large number of editions of ancient authors; and his "Thesaurus" of the Greek, remains to this day the great lexicon of the language. Robert, (another brother,) is distinguished for his very beautiful edition of the New Testament. The following account is given of him by his biographers.

"He received only such compositors into his printing-office as were conversant with the Greek and Latin languages. His workmen, in and about the office, were obliged to speak Latin. His wife and daughter understood this language thoroughly, and assisted him in carrying his directions into effect, so that, throughout his whole house and printing establishment, from the bureau of business to the kitchen, nothing was heard but the Latin tongue. He usually employed the proof-readers all from foreign countries, who spoke the various languages which they corrected. The zeal of this early and learned printer for study, for maintaining the honor and dignity of the press, and for the public good in general, is worthy of the highest commendation: and his character in this respect is worthy of imitation by all the members of the craft.

"The glory of the house of Stephens was shared by five successive generations, first in Paris, and afterwards at Geneva, in Switzerland."

Mr. Walter, of the London Times, was the first who applied the power of steam to the operations of the press. As early as 1804, an ingenious compositor, named Thomas Martyn, had invented a self-acting machine for working the press, and had produced a model which was very satisfactory. In the completion of his work he was much exposed to the hostility of the pressmen, who vowed vengeance against this threatened destruction to their craft. In consequence of their bitter opposition it became necessary to introduce the various pieces of the machine into the premises with the utmost possible secrecy. An English paper thus speaks of the extent of this opposition, and the agency of Mr. Walter in carrying forward the project, in spite of it.

"To such a length was their opposition carried, that it was found necessary to introduce the various pieces of the machine into the premises with the utmost possible secrecy, while Martyn was obliged to shelter himself under various disguises in order to escape their fury. Mr. Walter, however, was not yet permitted to reap the fruits of his enterprise. On the very eve of success, he was doomed to bitter disappointment. He had exhausted his own funds in the attempt, and his father, who had hitherto assisted him, became disheartened, and refused him any further aid. The project was therefore for the time abandoned.

"Mr. Walter, however, was not the man to be deterred from what he had once resolved to do.

"He gave his mind incessantly to the subject, and courted aid from all quarters, with his usual confidence. In the year 1814, he was induced by a clerical friend, in whose judgment he confided, to make a fresh experiment, and, accordingly, the machinery of the amiable and ingenious Koenig, assisted by his young friend Bauer, was introduced—not, indeed, at first into the Times office, but into the adjoining premises, such caution being thought necessary, from the threatened violence of the pressmen. Here the work advanced, under the frequent inspection and advice of the friend alluded to. At one period these two able mechanics suspended their anxious toil, and left the premises in disgust. After the lapse, however, of about three days, the same gentleman discovered their retreat, induced them to return, showed them, to their surprise, their difficulty conquered,

and the work still in progress. The night on which this curious machine was first brought into use in its new abode, was one of great anxiety and even alarm. The suspicious pressmen had threatened destruction to any one whose inventions might suspend their employment—"destruction to him and his traps."—They were directed to wait for expected news from the Continent. It was about six o'clock in the morning when Mr. Walter went into the press-room and astonished its occupants by telling them that "the Times was already printed by steam!—That, if they attempted violence, there was a force ready to suppress it; but that if they were peaceable, their wages should be continued to every one of them till similar employment could be procured—a promise which was, no doubt, faithfully performed; and, having so said, he distributed several copies among them. Thus was this most hazardous enterprise undertaken and successfully carried through, and printing by steam on an almost gigantic scale given to the world.

"Mr. Walter died in the midst of the General Election, on the 28th of July last, and the respect in which his memory was held, was shown by a circumstance almost without a parallel in Parliamentary history. The electors of Nottingham, on the day after his decease, without canvass or preparation, returned his son, Mr. J. Walter, to the House of Commons, by an immense majority."

We now enjoy in abundance the results of the mighty enterprise of these great discoverers, and have reason to be grateful that we live in an age in which science and art combine, without opposition, to give strength and permanency to our institutions. Every day brings us intelligence of some new invention, or the novel application of some old and long-established theory, to the production of almost inconceivable wonders of art and mechanism. Labor-saving machines are the order of the day; and the utmost extent of human ingenuity is taxed for the invention of more and more, till we can almost anticipate the period when manual labor in many departments of industry may be entirely dispensed with. But the printer is too important a member of the business community to have his usefulness set aside by the multiplication of type-setting and press-working machines, which are always liable to error, and to get out of repair. A good printer regards a single typographical error an indelible stain upon his reputation. In fact, we are told of one who deliberately committed suicide because a *turned letter* happened to be found in his matter. So long as the world jogs on, and society advances, the printer will always be among its class of useful citizens. And when he shall have filled up the *measure* of his days, and a small *space* of earth shall alone enclose his *outer form*, an *imposing stone* will mark the spot where rest his mortal remains, inscribed, like that of the immortal Franklin—

"The body of
 _____ Printer,
 (Like the cover of an old book)
 Its contents torn out,
 And stript of its lettering and gilding,
 Lies here food for worms—
 Yet the work itself shall not be lost."

ART. IV.—PRODUCTION OF RICE IN LOUISIANA.

SIR,—It was with much pleasure that I perused an article upon the subject of Rice,* in one of your numbers; a product that has latterly been diminishing, I think, in this state, the lands being bought up for the perhaps more lucrative crop of sugar. Though not quite so heavy in its gross amount as our two great staples, yet not an inconsiderable portion of our large parish, (Plaquemines,) and other parts of the state, are devoted to its production. This crop is more to be valued, as it is within the reach of the middling and poorer classes, giving to them a neat and comfortable support, and to many, a handsome revenue. But little capital is required in its cultivation, and it constitutes a particularly healthy food in damp southern latitudes. The consumption of it is immense; and from having been used a short time past in this county as a luxury, it is now to be found on all well-arranged tables in the Union.

In regarding the expensive and laborious works of a South Carolina rice plantation, one accustomed to the manner of its cultivation here, cannot but be struck with the very small difference in the yield, and the vast difference in labor. The quality, however, is different. South Carolina rice commands from one-half to three-fourths of a cent here more than Louisiana. This arises from two causes—the Louisiana rice not being as white, and the grains being more broken than the Carolina. Both of these faults, I believe, can be remedied by cultivation and improvements of machinery. I hoped to have seen in your article on the subject, the reason that some rice breaks more in cleaning than others. The difference in whiteness, I am aware, proceeds from the inferior manner of preparing it for market. Can you not point out the means of remedying the former defect, which must proceed from the *culture*? These are the two objectionable things against Creole or Louisiana rice. It is, however, much sweeter, and not so apt to get musty as the imported. I have heard exactly opposite reasons given by the planters here for the first of these faults. Certainly the improvement of a crop so important to a large number of the inhabitants of our state, tending to the division of our farming labors, a result most anxiously to be desired, from the low prices of both sugar and cotton, should occupy most particular attention.

The rice crop, from the great care with which it is made here, the extreme richness of the land, the adaptation of the climate to it, and perhaps it may be, the enervated habits of the people generally, has never been fostered or reduced to a science, as in other countries, where the soils are poorer and climate worse. I have conversed with many intelligent South Carolina planters and managers of planta-

* We have published several valuable papers upon Rice in our back volumes, and beg to call attention to them. The one in Vol. I. is the most elaborate yet published in the United States, and is from the pen of Mr. Allston, of South Carolina, a practical man, and an extensive planter. We invite information upon this subject from the rice planters.—[EDITOR.]

tions, and they all agree, that the land is suitable and climate proper, to vie here with Carolina, in both quantity and quality. There is this difference in favor of the cultivation of rice in Louisiana, on the borders of our rivers and tributaries:—It is well known that in Carolina, on the rice plantations, the water used is tide water, with little or no current, and the swamps large; that the water lies on large districts, sometimes drawn off, at others let on, leaving great fields, subject to the influence of a burning sun, creating malaria, and engendering the worst kind of disease, insomuch, that the planters yearly leave the country for the cities, where smoke and fires, or some other causes, seem to dispel the evil.

Such is not the case here. It is a well-known fact, that the rice plantations, both as regards whites and blacks, are more healthy than the sugar and cotton. From what cause does this arise, has been often asked by many? With the same hot sun and climate, and occupying a district of thirty to forty miles on both sides of the river, with but two or three sugar plantations, at long distances, there exists almost one undivided rice-field, making on an average about thirty thousand barrels of clean rice yearly, and overflowing the whole country around them, except a few front acres, generally appropriated to corn and potatoes. There can be but one cause for its health. The fall of the land is abrupt to the bayous and lakes behind, and the sea being near, at the time the Mississippi is high the rice is at the watering stage, and the water here not being taken off at all, is kept constantly running from the river back, preventing the back water from ever becoming stagnant, and carrying off, with the rapidity of its current, the vegetable matter that in decomposing causes malaria. The water, too, being drawn off at so late a date, the land does not dry sufficiently early to cause decomposition, before the cooler and stormy months come on and disperse it. Most certain it is, that no country so thickly settled in southern latitudes as the rice planting part of the Parish of Plaquemines, has a greater amount of healthy people and fine children. Why is not more attention paid to the improvement of the cultivation and manufacture of this valuable and lucrative staple?

The rice planters, as a body, generally consist of those who have but small farms, not wealthy, and hitherto almost entirely uneducated, and unable, from the smallness of their means, to vary their crops from their general routine; and not having the capital to put up sufficiently valuable machinery, and to properly prepare their crops for market, nor yet to get out more than ten to twelve barrels a day, they have never progressed since their commencement. This, too, while our other staples have advanced beyond the most sanguine expectations; having, at this present moment, we may say, stocked the whole world.

The common system of rice-planting here, is to begin in February to dig out the ditches, which, in a farm of four acres front on the river, consists of one ditch, four feet wide or more, four to five feet deep, running from the river to the swamp, with a dam or gate behind, at right angles, to this main ditch. At every half-acre is a

two-foot cross ditch, with a bank behind it to confine the water about a foot high, or more. At the back of the field is a four-foot ditch running parallel with the river, with a high bank on the outside to completely dam in the field, with a flood-gate opening behind to gauge the height of water. When March arrives, all the ditches having been opened, they commence ploughing, mud or not, rain or sunshine, if the oxen can go through it. There are generally six oxen, two drivers, and one to guide the plough. The work is, generally, where the land is dry, well and neatly done, with the old Roman plough, by us called the French sock plough, the best in the world for stiff land. I have tried such land successively with the centre draft of Jacob's, Cary, and others, none of which could equal this with the same team.

The planters sow and harrow in the rice in succession, as they can generally water the back cuts first, being lower than the front; and in the early part of the season, the river is not high enough to water any but the back, which covers up first, and is ready sooner for the water. The rice is sown broad-cast, about three-fourths of a barrel to an acre. I have often seen the planters harrow it in with oxen, knee-deep in mud. As soon as the back rice comes up, they put on a little water, just leaving the heads out, to check the weeds and grass; and from this time out it is kept in water, always leaving the heads out until ripe for cutting, at which time all the water is drawn off, or a little before. When the rice comes up, the weeds and grass also appear; the grass is kept under by water, but not so the weeds, and a kind of grass having a thousand seeds, that sometimes takes almost entire possession of the fields. These have to be carefully eradicated with the hand, pulling them up frequently, knee-deep in water. The process produces disagreeable effects on the legs, but is avoided by greasing them before going in, in the morning. The hands weed about one-quarter to one-third of an acre per day, and sometimes one-half or more, as the weeds are more or less bad, thick pulling them up by the roots, which readily yield. So quick is the vegetation of rice, that one weeding is enough; but from the slowness of the operation, the last part of the crop is very full of weeds before they can get to it, and sometimes should the water fall too soon, it is much injured by being choked by them. Here is, I think, one of the faults of the cultivation by the present mode. I will presently point out the mode of avoiding this disaster. The crop being finished, and the weeds taken out from the rice, they spend a short time preparing latania strips from the woods, to tie up the bundles, which they do in the field as it is dried. This is generally in July or August, when a man or two is hired to assist, and then, with the cycle, the rice is cut down very neatly, about one-half to three-quarters of an acre a day, as it may be, better or worse, standing or blown down. It dries one day in the sun. It is then tied in bundles, and put in small stacks in the field convenient to the cutters, without stack-poles. The grain is turned inside and the stem outside. When all is cut down and stacked in three small stacks, they arrange their

grain-yards and begin hauling in; the first cut being hauled first, and so on, until all is stacked at the house. The blocks are about three feet from the ground, and the stacks are made regular to hold about twenty barrels clean rice. They are well pointed, without poles, and topped with latania. By stacking first in the field in small stacks, the first sweat is passed through, and when it is opened and hauled, it is stacked a second time; it then becomes aired, and dries perfectly, and keeps for years without mould or mildew.

When rice is wanted for the mill, eight or ten tackeys, or small horses, are tied one to another to a post; the rice is placed on the ground about three feet deep, the heads up, and the animals are made to trot around, occasionally shaking up the rice. In this way about twenty barrels per day are usually trodden out. It is then turned in a small hand-mill of wood, like a common corn-mill, and partially hulled; then placed in a mortar, or four mortars in a row, where the like number of pestles pound it till the balance of the hull, and a skin that has a yellow appearance, is taken off. When it is fanned and freed from the chaff by this process, about seven to eight barrels a day is cleaned and prepared for market. This is, as yet, the largest amount averaged, I believe, in a day, except by a small steam-mill once started here by an engineer, which got out about twenty barrels a day; but the prejudice was so strong against that mode of cleaning, that the mill could at last neither buy, nor get rice upon toll, and was abandoned.

It is by preventing the weeds in the rice that its more extensive cultivation can be conducted, a better article produced, and the worst part of the labor avoided, allowing the worker to make more to the hand by a considerable quantity. It is here, generally, the rice planter fails; the weeds and grass catch him, and he loses much of his yields. He has also a worse quality of rice. I have recommended the following cultivation to several planters, but have been told that enough is made by the present process, and why should our alteration be adopted? The reason the weeds are so bad and the grass so troublesome, preventing the cultivation of so many acres properly, is that the ground is broken up in the spring after all the grass begins to grow, and the rice being planted immediately in succession, the roots of the grass and weeds never lose their life, but go on growing immediately, and gets ahead of the rice, which has to sprout, and is at first delicate and slow in starting. These roots can be killed by starting the ox plough in October and November, and ploughing all the land deeply during those months, the roots of the grass being turned up and exposed to the frosts of winter. Ditch in December and February, and then, with three horse ploughs in March, the already pulverized ground can be turned up and knocked to pieces, and harrowed over with a light horse harrow; then sow the rice and harrow it in lightly, keeping the ground as dry as you can; now you may moisten it with water slightly, and the rice will all come up and require little or no weeding. The quality will be better, and the quantity certainly considerably increased. By this process also, the old residuum on the ground will, being ploughed in early, be well rotted, and assist the

vegetation of the crop. The consequence of this fall and winter ploughing would save the like amount of work in the water at our most unhealthy season, and in the most valuable time to the planter. The weeding being light and early over, the preparations for cutting can be sooner made, the crop gathered in in good time, and I have no doubt, that instead of seven and eight barrels, ten and twelve can be made to the acre, and a much easier crop.

If the Carolina mode of working by drill were tried properly, I have no doubt it would be found advantageous here as it has been there. I have tried fifteen or twenty acres many years ago in that manner, and found it do well, yield well, and the rice was of good quality. I had no difficulty, with a good canal, in taking the water off and on when wanted. I hoed it the same as corn, and then let on water again. It is said that water had better be kept on until the rice is nearly ready to be cut, as it makes the stalk tender, and prevents it from breaking. In case of blowing down, many say if they make very heavy crops they cannot take them off. This is applicable to all southern crops; more hands have always to be hired in harvest, and it is a poor excuse.

There is no reason why Louisiana rice should not be as good as any other, and yield as much, except bad cultivation and worse manufacture. There is an immense amount of valuable rice land in the lower part of this parish, near the sea shore, on the river, very cheap, and far more valuable in proportion to their quantity than any other lands in the state. They have the advantage of climate for sugar, rice, or cotton. The net product of a common acre of land in rice, ready for sale, is eight to ten barrels. The common price is seven to eight dollars, sometimes five and ten dollars per barrel. The acres planted per hand are eight to ten, and as many as fifteen, sometimes, by the inhabitants of this neighborhood.

Trusting that these hasty lines will be followed by more elaborate contributions from experienced pens, and that an interest will be given in Louisiana to the important subject of rice,

I am, your ob't serv't,

R. A. WILKINSON.

Parish of Plaquemines, La.

AMERICAN STATISTICS.

OLD AND NEW STATES, REVOLUTIONARY STATISTICS, &c.

We have gathered, in a form for preservation, several items which may prove interesting to our readers.

1. The number of soldiers furnished by the American States during the Revolution, and the population of each in 1790 and in 1847.

2. Principal battles of the Revolution, their several dates, commanders-in-chief, and losses on each side.

3. Amount of continental money issued to support the war, and the estimated cost in specie.

4. States admitted in the Union since the organization of the Federal Govern-

ment in 1789, the date of admission, and the population at first census thereafter, and in 1847.

5. Area of the several States, population to each square mile, and the number of enrolled militia in the Union, estimated to 1847.

6. Amount of money deposited with the States by Act of Congress in 1836; also the total amount of property, real and personal, in each State, computing \$400 per head, the average adopted by the Commissioner of Patents in his Report of 1847.

7. Principal treaties with the Indians for lands north-west of the Ohio, and quantity ceded to the United States.

8. Estimated number of Indians between the Mississippi and Rocky Mountains, and the number west of the Rocky Mountains.

9. Area of the grand divisions of the Globe, with the population of each, and also to the square mile.

10. Productions of the United States, according to the census of 1840. This was the first attempt by the Government to obtain specific information in regard to the agricultural, mineral, and manufacturing industry of the Union. The estimates since have been predicated upon the statistics returned in 1840.

Some of these tables may be useful for reference, and are compiled mainly for that purpose. They are all from sources entitled to credit.

1.—REVOLUTIONARY STATES.

	Soldiers.	Pop. 1790.	Pop. 1867.
New-Hampshire.....	12,497.....	141,809.....	300,000
Massachusetts (including Maine).....	67,907.....	475,257.....	1,450,000
Rhode Island.....	5,908.....	69,110.....	130,000
Connecticut.....	31,959.....	238,141.....	330,000
New-York.....	17,781.....	340,120.....	2,780,000
New-Jersey.....	10,726.....	184,139.....	416,000
Pennsylvania.....	25,678.....	434,373.....	2,125,000
Delaware.....	2,386.....	59,098.....	80,000
Maryland.....	13,912.....	319,728.....	495,000
Virginia.....	96,678.....	748,308.....	1,270,000
North Carolina.....	7,263.....	393,751.....	765,000
South Carolina.....	6,417.....	249,073.....	605,000
Georgia.....	2,679.....	82,548.....	800,000
Total.....	231,971.....	3,820,959.....	11,546,000

2.—BATTLES OF THE REVOLUTION.

When and where fought.	Am. Com. and loss.	British Com. and loss.
Lexington.....April 19, 1775.....	84.....	245.....
Bunker Hill.....June 17, ".....	Warren.....433.....	Howe.....1054.....
Flatbush.....August 19, 1776.....	Putnam.....2000.....	Howe.....400.....
White Plains.....October 28, ".....	Washington.....300.....	Howe.....300.....
Trenton.....December 25, ".....	Washington.....9.....	Rahl.....1000.....
Princeton.....January 3, 1777.....	Washington.....100.....	Mawhood.....400.....
Bennington.....August 16, ".....	Stark.....100.....	Baum.....600.....
Brandywine.....September 11, 1777.....	Washington.....1200.....	Howe.....500.....
*Saratoga.....October 17, ".....	Gates.....350.....	Burgoyne.....600.....
Monmouth.....June 25, 1778.....	Washington.....230.....	Clinton.....400.....
Rhode Island.....August 29, ".....	Sullivan.....211.....	Pigott.....280.....
Briar Creek.....March 30, 1779.....	Ash.....300.....	Prevost.....16.....
Stony Point.....July 15, ".....	Wayne.....100.....	Johnson.....600.....
Camden.....August 16, 1780.....	Gates.....720.....	Cornwallis.....375.....
Cowpens.....January 17, 1781.....	Morgan.....72.....	Tarleton.....800.....
Guilford.....March 15, ".....	Greene.....400.....	Cornwallis.....523.....
Eutaw Springs.....September 8, ".....	Greene.....555.....	Stewart.....1000.....

The surrender of Cornwallis at Yorktown, October 19, 1781, closed the war; prisoners 7,073.

* 5,752 British taken prisoners.

3.—CONTINENTAL MONEY.

Amount issued in 1775.....	\$2,000,000
" " " 1777.....	20,000,000
" " in all to July 4, 1779.....	358,000,000
<i>The whole expenses of the war, estimated in specie, amounted to \$135,193,793.</i>	

4.—STATES ADMITTED SINCE 1789.

	Date.	1st Census.	Pop. 1847.		Date.	1st Census.	Pop. 1847.
Vermont.....	1791..	154,465..	*302,000	Maine	1820..	298,335..	600,000
Kentucky.....	1792..	290,955..	855,000	Missouri.....	1821..	140,445..	600,000
Tennessee.....	1793..	105,609..	850,000	Arkansas.....	1836..	97,374..	152,000
Ohio	1803..	930,760..	1,850,000	Michigan.....	1836..	212,267..	370,000
Louisiana.....	1812..	153,407..	470,000	Texas.....	1845..	*140,000..	140,000
Indiana.....	1815..	147,178..	960,000	Florida.....	1845..	75,000..	75,000
Mississippi.....	1716..	75,448..	600,000	Iowa.....	1846..	130,000..	130,000
Illinois.....	1818..	55,211..	735,000	Wisconsin.....	1848..	215,000..	215,000
Alabama.....	1819..	127,901..	600,000				

* For 1847, the estimate is from the Report on Patents; total 20,746,800.

5.—AREA, AND MILITIA OF THE STATES.

	Sq. Miles.	Pop.	Sq. M.	Militia.		Sq. Miles.	Pop.	Sq. M.	Militia.
Maine	32,400	15	47,352		Mississippi.....	49,356	8	38,084	
New-Hampshire.....	9,500	30	34,471		Louisiana.....	47,413	7	15,808	
Vermont.....	9,700	30	28,536		Arkansas.....	54,617	2	4,028	
Massachusetts.....	7,800	95	92,215		Tennessee.....	41,752	20	75,252	
Rhode Island.....	1,351	87	15,955		Kentucky.....	40,093	20	81,376	
Connecticut.....	4,789	65	48,470		Ohio.....	40,500	38	190,258	
New-York.....	46,220	59	191,079		Michigan.....	60,537	4	13,766	
New-Jersey.....	7,948	47	40,170		Indiana.....	35,626	19	55,913	
Pennsylvania.....	46,215	37	266,937		Illinois.....	56,506	9	86,234	
Delaware.....	2,068	39	10,299		Missouri.....	70,080	5	62,689	
Maryland.....	10,755	44	48,864		Florida.....	56,336	1	2,307	
Virginia.....	65,700	19	121,988		Texas.....	100,000	1	.....	
North Carolina.....	51,632	15	65,218		Iowa.....	173,786	1	.....	
South Carolina.....	31,565	19	62,566		Wisconsin.....	92,930	2	10,223	
Georgia.....	61,683	11	59,312						
Alabama.....	54,084	11	46,332		Total.....	1,262,842		1,821,093	

6.—DEPOSITE WITH THE STATES, &c.

	Amt. Dep.	Value Prop'y.		Amt. Dep.	Value Prop'y.
1 New-York.....	\$4,014,520	\$1,112,000,000	18 Alabama.....	669,086	276,000,000
2 Penna.....	2,867,514	850,000,000	19 Illinois.....	477,219	294,000,000
3 Virginia.....	2,198,427	508,000,000	20 Louisiana.....	477,219	188,000,000
4 Ohio.....	2,007,260	740,000,000	21 Mississippi.....	383,335	256,000,000
5 N. Carolina.....	1,433,756	306,000,000	22 R'de Isl'd.....	383,335	52,000,000
6 Tennessee.....	1,433,756	360,000,000	23 Missouri.....	383,335	240,000,000
7 Kentucky.....	1,433,756	342,000,000	24 Delaware.....	226,751	32,000,000
8 Mass.....	1,338,173	340,000,000	25 Michigan.....	286,751	148,000,000
9 S. Carolina.....	1,051,422	242,000,000	26 Arkansas.....	286,751	69,000,000
10 Georgia.....	1,051,422	320,000,000	27 Florida.....	.....	30,000,000
11 Maine.....	958,838	240,000,000	28 Texas.....	.....	56,000,000
12 Maryland.....	958,838	198,000,000	29 Iowa.....	.....	52,000,000
13 Indiana.....	860,254	384,000,000	30 Wisconsin.....	.....	36,000,000
14 Connecticut.....	764,670	132,000,000	Oreg. T'y.....	.....	8,000,000
15 N. Jersey.....	764,670	166,000,000	Dia. of Col. ....	.....	18,000,000
16 N. Hampsh'r.....	669,086	120,000,000			
17 Vermont.....	669,086	120,000,000	Total.....	28,209,230	\$8,394,000,000

7.—INDIAN TREATIES IN NORTH WEST.

Place of holding.	Date.	Acres.
1 Greenville.....	August 3, 1795.....	17,724,489
2 Fort Wayne.....	June 7, 1803.....	1,634,000
3 Vincennes.....	August 13, 1803.....	8,608,167
4 Vincennes.....	August 18, 1804.....	1,910,717
5 St. Louis.....	November 2, 1804.....	14,000,000
6 Fort Industry.....	July 4, 1805.....	2,726,812
7 Grouse-land.....	August 21, 1805.....	1,244,211
8 Vincennes.....	December 30, 1805.....	2,616,921
9 Detroit.....	November 17, 1807.....	5,937,760
10 Fort Wayne.....	September 30, 1809.....	2,136,266
Total.....		56,539,343

8.—INDIANS WEST OF MISSISSIPPI.

The number of Indians between the Mississippi and Rocky Mountains is estimated at.....	293,101
West of the Rocky Mountains.....	490,000
East of the Mississippi.....	31,587
Total.....	744,688

9.—AREA AND POPULATION OF THE GLOBE.

Grand Divisions.	Sq. Miles.	Population.	Pop. to Sq. M.
Europe.....	3,700,000	240,000,000	65
Asia.....	15,700,000	400,000,000	25
Africa.....	11,000,000	68,000,000	6
Oceania.....	4,000,000	20,000,000	5
North America.....	7,300,000	40,000,000	5
South America.....	7,117,000	18,000,000	2
Total.....	48,817,000	786,000,000	15

10.—PRODUCTIONS OF UNITED STATES, 1840.

Productions.	Average price.	Value.
1 Indian Corn.....	25 cents per bushel	\$94,382,268
2 Wheat.....	\$1 " "	84,823,372
3 Cotton.....	10 cents per lb.	79,047,956
4 Cotton goods.....		46,350,459
5 Woollen goods.....		20,696,992
6 Iron, cast and bar.....	\$40 per ton	19,397,640
7 Lumber.....		12,943,507
8 Tobacco.....	5 cents per lb.	10,958,665
9 Lead.....	3 " " "	9,371,735
10 Sugar.....	5 " " "	7,755,000
11 Coal.....	\$4 per ton	7,327,819
12 Ships and other vessels.....		7,016,094
13 Paper.....		5,641,493
14 Rice.....	3 cents per lb.	2,425,242
15 Salt.....	30 cents per bushel	1,837,522

11.—AMERICAN LEATHER AND TANNING BUSINESS.

Hon. Zadoc Pratt, of New-York, the most extensive tanner in America, we believe, has addressed a letter to the American Institute, in which he furnishes some most interesting statistics in regard to that branch of trade and manufacture. Mr. Pratt has sent us a copy of his communication. This gentleman deserves well of his country for the enterprise he has ever displayed, and in our intercourse with him, both in New-York and in New-Orleans, we have found the greatest satisfaction.

From the letter we extract the following in regard to the period occupied in tanning various descriptions of leather:—

	No. of sides.	Time of tan'g. mo. ds.		No. of sides.	Time of tan'g. mo. ds.
1841—San Juan.....	7,500	4 20	1843—Rio Grande....	5,800	4 20
Orinoco.....	3,500	5 15	1844—Buenos Ayres..	6,500	6 20
".....	1,900	6 ..	Orinoco.....	5,400	7 ..
".....	9,000	6 10	California.....	1,900	6 20
Laguaira.....	22,000	7 15	Buenos Ayres..	900	7 10
Orinoco.....	6,500	5 15	".....	6,500	5 10
Matamoros.....	1,100	5 ..	Orinoco.....	1,500	4 20
".....	2,300	5 20	Rio Grande...	2,100	5 ..
San Juan.....	6,500	4 15	".....	4,000	5 10
Montevideo....	5,800	4 ..	Orinoco.....	2,800	6 10
1842—Honduras.....	3,600	6 20	Laguaira.....	5,100	7 ..
Buenos Ayres..	10,500	6 10	Rio Grande....	1,100	7 ..
Chagres.....	1,700	6 ..	Buffalo.....	2,000	5 ..
1843—Orinoco.....	1,100	5 ..	Buenos Ayres..	2,000	6 ..
Montevideo....	2,700	5 ..	Rio Grande....	8,500	6 10

From the above table, it will be seen the average time of tanning in 1842, was five months and seventeen days; of 1843, five months and twenty-two days; of 1844, six months; and of 1845, six months and eleven days. Average of the whole time, five months and twenty-seven days. The average weight of the leather was over eighteen and one-half pounds per side. This, according to the best authorities we have at hand, is considerably below the time employed in England. There, it is no uncommon thing for eight and ten months to be employed in tanning a stock of leather, and some of the heaviest leather, it is said, takes even fourteen and eighteen months. Such deliberation undoubtedly insures a fine quality of leather; but it may be questioned whether there is not a great loss in the increase of weight—a loss of interest on capital, and in consequence an unnecessary enhancement of price, which does not suit the American market.

12.—SOLE LEATHER INSPECTED IN NEW-YORK.

Showing the total number of sides of Sole Leather inspected in the city of New-York, during the years 1827 to 1847, say 20 years; also, showing the nett value or price per pound of same, excluding all charges.

Years.	No. sides.	Av. price.	Years.	No. sides.	Av. price.
1827	265,553	17½ cents.	1837	890,962	16 cents.
1828	284,978	18½	1838	749,556	17
1829	264,878	18½	1839	772,255	18 1-6
1830	326,298	18½	1840	636,112	16½
1831	440,000	19½	1841	687,101	16½
1832	667,000	17½	1842	886,868	14 1-10
1833	882,609	15½	1843	867,210	13½
1834	828,175	13½	1844	1,048,770	13½
1835	784,165	14½	1845	1,037,500	12½
1836	925,014	17½	1846	1,074,256	11½

13.—HIDES—NEW-YORK.

Showing the number of Hides imported into, exported from, and consumed by the port of New-York, during the years 1827 to 1847, say 20 years, closing each year on 31st December. This table includes Horse Hides, taken from Shipping and Commercial Lists and Customs.

Years.	Imports.	Exports.	Cons'd.	Years.	Imports.	Exports.	Cons'd.
1827 ...	259,975	41,545	218,430	1838 ...	543,300	25,695	517,605
1828 ...	268,744	46,369	220,375	1839 ...	561,105	24,186	536,919
1829 ...	308,987	52,023	256,964	1840 ...	520,251	31,323	488,926
1830 ...	475,640	26,305	449,335	1841 ...	633,289	4,945	629,024
1831 ...	772,299	8,017	764,282	1842 ...	635,631	31,286	604,345
1832 ...	975,094	169,493	662,705	1843 ...	653,431	53,633	599,788
1833 ...	892,198	58,282	833,916	1844 ...	654,790	45,615	809,175
1834 ...	700,052	169,856	530,196	1845 ...	777,640	53,633	724,007
1835 ...	868,381	21,903	836,378	1846 ...	636,583	55,224	580,659
1836 ...	942,890	109,273	833,617	1847 ...	990,454	15,236	975,069
1837 ...	623,923	99,356	524,569				

14.—HIDES—LIVERPOOL.

Years.	Imports.	Exports.	Years.	Imports.	Exports.
1827	186,127	29,001	1837	573,384	166,930
1828	290,519	30,880	1838	503,806	102,000
1829	542,411	128,449	1839	816,085	190,000
1830	514,260	170,604	1840	643,785	170,000
1831	564,869	138,220	1841	924,060	200,000
1832	351,897	111,450	1842	666,974	259,265
1833	692,419	62,000	1843	846,526	176,556
1834	626,189	213,855	1844	800,871	.....
1835	682,141	337,444	1845	810,704	.....
1836	479,107	198,277			

From the census of New-York, in 1845, we gather the following:—

The number of tanneries in the State	1,414
Value of raw materials used and manufactured in the State	\$4,032,949
Value of manufactured articles	6,585,006

This is for leather alone, not including boots, shoes, harness, &c., &c.

WESTERN STATISTICS.

I.—DISTANCES AND RATES OF FARE ON WESTERN RIVERS, &c.

In this day of travel, we deem rates and time worthy of notice, as belonging to the class of subjects within our jurisdiction. The season having arrived when journeys, for health, business and pleasure, are interesting, if not common, to all, we have collected items which may prove satisfactory, as deciding routes to a great centre or circumference of wayfaring. People, not only of New-Orleans, but from a distance, having excursions in view west and north, will be aided by our tables in economising time and expense,—the first not very important in summer, so health is promoted, and the other more or less weighty, according to purse and disposition.

We take New-Orleans as the point from which most of the computations are made. The rates of passage vary in winter and spring, the latter, towards the close, being about 50 per cent. higher, owing to the diminution of freights. The prices we name are those of first class boats. Less may be charged by those of a different description. Indeed, there is no uniform scale agreed upon for passengers, though the slide is not very great. The Mississippi, and its chief tributaries, with the principal towns, and spring rates, are thus stated:

	Miles.	Fare.
From New-Orleans to Baton Rouge.....	140	\$5 00
" " " Natchez.....	300	8 00
" " " Vicksburg.....	420	10 00
" " " Memphis.....	810	12 00
" " " Cairo.....	1,020	12 00
" " " Louisville.....	1,400	13 00
" " " Cincinnati.....	1,540	15 00
" " " Maysville.....	1,600	17 00
" " " Wheeling.....	1,920	22 00
" " " Pittsburg.....	2,000	23 00
" " " St. Louis.....	1,200	14 00
" " " Dubuque.....	1,650	20 00
" " " Falls of St. Anthony.....	2,000	23 00
" " " Nashville, Tenn.....	1,310	20 00
" " " Florence, Ala.....	1,380	12 00

2.—DISTANCES FROM NEW-ORLEANS TO THE LARGEST TRIBUTARIES OF THE MISSISSIPPI, AND PRICE OF PASSAGE.

	Miles.	Fare.
To mouth of Red river.....	230	\$6 00
" " Big Black river.....	350	8 00
" " Yazoo.....	410	8 00
" " Arkansas.....	600	10 00
" " White.....	620	10 00
" " St. Francis.....	670	10 00
" " Ohio.....	1,020	12 00
" " Kaskaskia.....	1,150	12 00
" " Missouri.....	1,220	14 00
" " Illinois.....	1,280	14 00
" " Makoketa.....	1,650	20 00
" " Wisconsin.....	1,750	20 00
" " Upper Iowa.....	1,800	20 00
" " Black.....	1,850	22 00

3.—DISTANCES TO THE HIGHEST POINTS OF STEAM NAVIGATION, &c

	Miles.
From mouth of Red river to Shreveport.....	262
" " Arkansas river to Fort Gibson.....	585
" " Tennessee " to Florence, Ala.....	279

	Miles.
From mouth of Cumberland river to Nashville.....	201
" " Kentucky "to Frankfort.....	65
" " Wabash "to Lafayette, Ia.....	312
" " Illinois "to Ottawa.....	266
" " Missouri "to St. Joseph's.....	464
" " Ohio "to Pittsburg.....	1,019
" " Upper Mississippi river to Falls of St. Anthony..	947

Perfect accuracy is not claimed for these figures. River distances are seldom measured, and are given only as matter of opinion. We have used the best data within our reach. The rates of fare on steamboats may not be correctly stated in all instances, for want of the proper information, which no person could supply. Enough, however, is furnished to answer general purposes; the difference either way will be slight.

Having disposed of river travel, we glance briefly at the sea, with rates of passage to several ports in communication with New-Orleans.

4.—FARE TO U. S. PORTS FROM NEW-ORLEANS.

From New-Orleans to Mobile.....	\$5 00
" " " Pensacola.....	8 00
" " " Tampa Bay.....	15 00
" " " Galveston.....	20 00
" " " Brazos St. Jago.....	16 00
" " " Savannah.....	25 00
" " " Charleston.....	25 00
" " " Baltimore.....	30 00
" " " Philadelphia.....	35 00
" " " New-York.....	40 00
" " " Boston.....	40 00

5.—FARE TO FOREIGN PORTS FROM NEW-ORLEANS.

From New-Orleans to Tampico.....	\$25 00
" " " Vera Cruz.....	30 00
" " " Havana.....	25 00
" " " Liverpool.....	120 00
" " " London.....	125 00
" " " Havre.....	120 00

In regard to ship passage, there is less uniformity than on the rivers. The Northern packets, with fine cabins and accommodations, usually charge a little more than the prices above stated, and other vessels something less. As yet, there is no established line of packets from New-Orleans to any European port. The ships prefer taking freight, but will receive passengers on terms as favorable as can be afforded. It is, perhaps, unnecessary to say, that the rates specified are for the cabin. In the steerage, we presume, they would not be half as much.

The vessels that trade to New-Orleans are from all parts of the globe; and the traveller may be suited to a voyage accordingly.

6.—PRICES, FREIGHTS, INSURANCE, &c., EAST AND WEST.

Whatever belongs to commerce is worthy of attention, be it values or expense of any kind. To show several home markets, we have selected a dozen or fifteen articles, with prices to each. These indicate enough for a general view, about June 1, 1848.

Next in order, we have prepared a table of freights, which may be useful to parties interested. Barrel and pound measure is charged differently, and all bulks are usually resolved into one or the other of these classes,—five square feet allowed to the barrel.

Insurance to cover losses being common, we subjoin a statement of rates in New-Orleans.

7.—PRICES AT SEVERAL POINTS.

	N. Orleans.	St. Louis.	Cincinnati.	Memphis.	Charleston.	Baltimore.	New-York.
Flour,.....bbl.	5 50	4 50	4 50	6 00	5 75	5 68	6 00
Mackerel, No. 1, "	10 00	11 00	11 00	—	—	9 00	9 00
Pork, mess,....."	8 50.	7 75	7 75	—	—	9 50	10 00
Pork, bulk,.....pound,	3	2	2	3	—	—	—
Bacon,....."	4	3	3	4	5	4	5
Lard,....."	6	5	5	6	8	7	7
Coffee,....."	7	8	8	8	8	7	7
Sugar,....."	4	5	5	5	—	5	4
Rice,....."	4	5	5	—	3	4	4
Nails,....."	5	5	5	—	5	5	4
Tobacco,....."	6	5	5	—	—	5	6
Candles, sperm,...	32	35	35	35	34	32	31
Molasses,.....gallon,	15	25	27	25	27	26	27
Whiskey,....."	18	15	15	17	—	23	21
Corn,.....bushel,	38	18	28	20	55	48	54
Salt,.....sack,	1 20	1 90	1 62	1 50	—	1 20	1 05

8.—STEAM-BOAT FREIGHTS, &c.

	Hhd. Tobacco.	Barrel.	100 pounds.	Cwt. Lead.	Bushel Corn.	Stock per head.
From St. Louis to New-Orleans,....	2 25	40	18	10	8	5 00
" Louisville " ".....	3 00	50	25	—	—	—
" St. Louis to Pittsburg,.....	—	60	25	18	12	—
" New-Orleans to New-York,....	6 00	60	—	—	10	—
" " " Liverpool,....	10 00	1 00	—	—	30	—
" Pittsburg to Philadelphia,....	9 00	1 25	75	—	32	—

The rates from New-Orleans up the rivers are not given, for want of proper data. We presume there is something like uniformity, though we have not seen the rates published. They may be inferred, however, from the items of downward freight from Louisville and St. Louis.

As information to those who may desire to visit or travel beyond the North-Western Lakes, we annex rates of passage and freight from Buffalo, N. Y.

9.—PASSAGE AND FREIGHT FROM BUFFALO, NEW-YORK.

	Cabin Passage.	Storage Passage.	Barrel.	100 lbs.	Oxen and Horses.
From Buffalo to Erie,.....	\$3 00	2 00	50	20	2 50
" " " Conneaut and Ashtabula,....	4 00	2 50	50	20	3 00
" " " Fairfort and Cleveland,....	4 50	2 50	50	20	4 00
" " " Huron and Sandusky,....	5 00	3 00	50	20	5 00
" " " Maumee River,.....	6 00	3 00	50	20	5 00
" " " Monroe and Detroit,.....	6 00	3 00	50	20	6 00
" " " Mackinaw,.....	10 00	6 00	1 00	30	10 00
" " " Milwaukee,.....	10 00	6 00	1 00	30	10 90
" " " Southport and Chicago,...	12 00	6 00	1 00	80	10 00

10.—RATES OF INSURANCE FROM NEW-ORLEANS.

By giving a few places near the head of navigation on the rivers, all the intermediate points will be included in the rates of insurance which we annex. Where the distance and risk are considerably less, there may be a slight reduction.

On the rivers, a premium of one per cent. is charged to St. Louis, Cincinnati, Nashville, and Montgomery, Ala. To Pittsburg, one and one-fourth per cent., and to Tusculumbia, Ala., one and one-eighth.

To Mobile, from one-fourth to three-eighths of one per cent.

On the Gulf of Mexico, to Galveston and Matagorda, one and a quarter; to Brazos St. Jago, two; to Matamoras, three, and to Tampico and Vera Cruz, from one and a half to one and three-fourths per cent.

To Savannah, Charleston, Baltimore, Philadelphia, New-York, Boston, and other Atlantic ports, one and a quarter per cent.

To Liverpool, Havre, and other European ports, from one and a quarter to one and three-fourths per cent.

11.—PORK TRADE OF THE WEST.

We avail ourselves of the labors of the St. Louis Republican and Western Journal, in the statistics that follow. They are of inestimable value. How inexhaustible is our great west?

HOGS SLAUGHTERED IN THE WEST.

OHIO.

<i>Places.</i>	1843-4.	1844-5.	1845-6	<i>Places.</i>	1843-4.	1844-5.	1845-6.
Cincinnati,	240,000	196,000	300,000	Waynesville,	6,000	6,000	9,000
Columbus,	14,000	8,000	19,000	Hamilton,	40,000	32,000	30,000
Riversport,	1,700	1,500	4,600	Camden,	8,000	7,000	9,000
Lancaster,	2,500	1,100	1,300	Eaton,	3,800	7,000	1,400
Circleville,	4,300	12,000	19,000	Clarksville,	11,000	10,000	6,200
Chillicothe,	52,000	24,000	40,000	Centreville,	700	600	1,200
Bainbridge,	3,000	550	1,200	Dayton,	20,000	12,000	8,000
Baltimore,	1,300	800	1,900	Troy,	4,000	1,000	2,000
Waverly,	2,800	1,300	4,000	New Paris,	5,000	10,000	7,000
Portsmouth,	2,000	900	1,500	Middletown,	10,000	7,500	8,500
Ripley,	—	10,000	15,200	Winchester,	1,200	800	1,000
Xenia,	5,000	1,500	1,200	Bellbrook,	1,400	1,400	3,000
Franklin,	3,000	2,800	2,900	Lebanon,	4,000	4,000	4,300
Piqua,	5,000	1,500	2,000	Greenville,	2,500	1,000	600

INDIANA.

<i>Places.</i>	1843-4.	1844-5.	1845-6.	<i>Places.</i>	1843-4.	1844-5.	1845-6.
Richmond,	5,400	800	1,100	Lagree,	3,000	—	1,000
Madison,	65,000	45,000	63,000	Fort Wayne,	3,000	800	2,000
Lafayette,	25,000	15,000	15,000	Covington,	5,000	4,000	6,000
Lawrenceb'g,	13,000	9,000	10,000	Eugene,	6,000	5,800	6,000
Connorsville,	—	1,000	7,000	Attica,	2,700	1,700	3,500
Evansville,	5,000	4,000	7,000	Dupin,	7,000	2,000	6,000
Laurel,	8,000	7,000	8,000	Terre Haute,	27,000	18,000	20,000
Brookville,	8,500	6,000	6,000				

ILLINOIS.

<i>Places.</i>	1843-4.	1844-5.	1845-6.	<i>Places.</i>	1843-4.	1844-5.	1845-6.
Alton,	37,000	16,000	23,000	Pekin,	20,000	10,000	—
Beardstown,	15,000	14,000	12,000	Quincy,	17,000	8,000	9,937
Griggsville,	3,000	2,500	3,500	Springfield,	16,000	3,000	3,400
Meredosia,	6,000	3,500	3,600	Whitehall,	8,000	1,000	1,200
Naples,	4,000	764	2,753	Winchester,	1,200	6,000	—
Peoria,	15,000	5,000	—				

MISSOURI.

<i>Places.</i>	1843-4.	1844-5.	1845-6.	<i>Places.</i>	1843-4.	1844-5.	1845-6.
St. Louis,	—	16,000	30,498	Missouri river,	—	—	22,000
Upper Miss. riv.,	—	—	41,000				

KENTUCKY.

Places.	1843-4.	1844-5.	1845-6.	Places.	1843-4.	1844-5.	1845-6.
Louisville,	68,000	42,000	101,000	Bowling Green,	7,000	7,000	10,000
Westport,	11,000	14,000	17,000	Clarksville, Ten.	2,000	5,000	5,000
Maysville,	14,000	7,000	7,500				

12.—NUMBER OF HOGS SLAUGHTERED IN 1847-8.

OHIO RIVER.

Wheeling	5,000	Wabash and White	
Cincinnati	475,000	rivers	200,000
Madison	75,000	Scioto Valley	100,000
Louisville	100,000	Aurora	10,000
Maysville	10,000	Covington	6,000
Tennessee & Cumberland rivers	100,000	Total number,	1,081,000

MISSISSIPPI RIVER.

St. Louis	63,924	Quincy	20,000
Alton	35,000	Keokuk	10,000
Hannibal	20,000	Oquawka	5,000
Rockport	3,000	Bloomington	10,000
Lagrange and Tully	5,000	Fort Madison	10,000
Churchville	5,000	Burlington	15,000
Louisiana	5,000	Total number,	216,924
Warsaw	10,000		

ILLINOIS RIVER.

Peru	3,000	Point Isabel	5,000
Lacon	5,000	Beardstown	25,000
Peoria	25,000	Meredosia	10,000
Pekin	25,000	Naples	6,000
Lagrange	3,000	Griggsville	6,000
Canton	10,000	Tremont	1,500
Knoxville	10,000	Total number,	156,500
Springfield	2,000		

MISSOURI RIVER.

St. Joseph	5,000	Boonville	4,000
Weston	10,000	Rocheport	3,900
Lexington	2,000	Liberty	2,000
Camden	5,000	Total number,	39,000
Brunswick	5,000		
Glasgow	3,000		

Total amount of above tables. - - - 1,492,924

There are several small towns not embraced in the above table, which will probably swell the total to 1,500,000.

From the foregoing, we gather the following results for the last five years: Total number for 1843-4, 912,000; 1844-5, 642,000; 1845-6, 955,588; 1846-7, 800,000; 1847-8, 1,492,924.

The following statement has been furnished us of the operations of the several slaughterers in this city during the past season:

13.—NUMBER OF HOGS PACKED IN ST. LOUIS FOR THE SEASON 1847-8.

Mr. S. Finley	9,000	Finney	1,000
H. Ames	9,300	Waddingham	2,000
McAlisters	5,000	Schipman	1,272
Risley	7,000	Craft	1,050
Conn	5,500	Scheenthaler	800
Steitz	5,112	Shaffer	3,000
Bates	3,000	Total number	63,924
McFaul	3,500		
Sigerson	7,390		

From the foregoing statements, it will be seen that there has been an increase in the number of hogs slaughtered, amounting to 50 per cent. on the products of any previous year. In St. Louis, the slaughtering business has risen from 33,000 in 1846-7, to 63,000—about double—in 1847-8.

The following table furnishes a list of the number of hogs put up each year in Cincinnati, since 1833, inclusive, and the prices at which the market opened. The season begins in November and ends in March. Each year refers to that in which business closed.

Year.	No. Hogs.	Price.	Year.	No. Hogs.	Price.
1833.....	85.000		1841.....	160.000	\$3.50a3.75
1834.....	123.000		1842.....	220.000	2.00a2.50
1835.....	123.000		1843.....	250.000	1.62a2.00
1836.....	123.000	\$6.00a6.25	1844.....	240.000	2.25a2.65
1837.....	103.000	6.00a7.00	1845.....	213.000	2.50a2.70
1838.....	182.000	3.50a4.00	1846.....	287.000	4.00a4.25
1839.....	199.000	5.50a6.00	1847.....	250.000	2.70a2.80
1840.....	95.000	3.00a3.50			

14.—HOGS PACKED IN OHIO.

In 1844, 560,000; 1845, 450,000; 1846, 425,000; 1847, 325,000; of which aggregate, Cincinnati packed alone, in 1844, 43 per cent.; in 1845, 47 per cent. in 1846, 68 per cent.; in 1847, 70 per cent.

The entire packing of the West may be divided as follows:

	1844.	1845.	1846.		1844.	1845.	1846.
Missouri	16.000	31.700	70.898	Indiana	257.414	147.420	250.236
Tennessee	16.000	1.500	42.975	Ohio*	560.748	445.538	420.833
Kentucky	91.000	83.300	12.500	Union Pt.	1.200	8.830	18.675
Illinois	136.709	67.964	68.120				

* Five minor points in this state not ascertained, and not included in this list, are supplied by estimates in tables, showing the number of hogs put up in each year.

15.—PRICE OF PICKLED PORK IN NEW-YORK, FROM 1823 TO 1847 INCLUSIVE.

Year.	Mess.	Pickled.	Year.	Mess.	Pickled.	Year.	Mess.	Pickled.
1823	\$13.31	\$9.78	1832	13.77	11.22	1840	15.07	12.96
1824	13.78	10.32	1833	14.97	11.53	1841	11.36	9.48
1825	13.83	10.22	1834	14.20	10.21	1842	9.27	7.23
1826	11.55	7.84	1835	17.96	13.08	1843	10.32	8.59
1827	13.31	8.62	1836	23.13	17.65	1844	9.28	7.39
1828	12.71	10.06	1837	21.66	15.99	1845	12.13	9.51
1829	12.79	10.24	1838	21.97	16.59	1846	10.50	8.78
1830	13.64	9.37	1839	19.32	15.72	1847	15.00	12.58
1831	14.30	11.13						

But a small quantity of what is actually packed is exported to foreign countries, as is seen by the following table:

16.—EXPORTS, PORK.

Year.	Barrels.	Year.	Barrels.	Year.	Barrels.
1831	51.263	1837	24.540	1842	180.039
1832	88.025	1838	31.336	1843	80.310
1833	105.840	1839	41.301	1844	162.689
1834	82.691	1840	66.281	1845	161.609
1835	61.827	1841	182.399	1846	190.422
1836	22.540				

More than three-fourths of the exports are to the British Colonies, South America and the West India Islands.

EUROPEAN STATES AND POPULATION.

I.—THE PAPAL STATES.

The Hon. John A. Dix, Senator from the State of New-York, delivered in March last a most able and luminous speech on the propriety of sending a Minister to the Papal States. This speech embraces a full discussion of all the interesting questions which arise, and exhibits in striking colors the progress of liberal principles in Italy. We present the major portion of it to our readers, as most worthy of preservation and study.

The Pope is to all intents a temporal sovereign. He has been so for the last eleven hundred years. I believe the first territorial possession of the Pope was conferred upon him by Pepin, the father and predecessor of Charlemagne, in the eighth century. It consisted of the Duchy of Rome, or, at that time, more properly called the Exarchate of Ravenna, and was wrested by the King of France from the Lombards, who had overrun northern and central Italy. It extended from the present frontier of Naples, on the Mediterranean, to the mouth of the Tiber, including the Southern Campagna and the Pontine Marshes, and running back to the Sabine and Volscian hills. In the twelfth century, the Countess Matilda, of Tuscany, bequeathed her possessions to the Pope. They embraced the patrimony of St. Peter, on the Mediterranean, extending from the mouth of the Tiber to the present frontier of Tuscany, and the march of Ancona on the Adriatic, with the adjoining district of Spoleto. Large accessions were subsequently made by conquest—Umbria, Romagna, Perugia, Orvieto, Citta di Castello, Bologna, Ravenna, and other cities and districts of country. In the seventeenth century, the Duke of Urbino abdicated in favor of the Pope; and at a still later period, some further additions were made by arms. Thus, the territorial possessions of the Pope are held, like those of other sovereigns, by succession, donation and conquest. I consider the territorial possessions of the Church as much the dominions of the Pope, as the territorial possessions of Spain are the dominions of her Most Catholic Majesty; and I see no more reason to decline diplomatic relations in the first case than in the last, unless there is, in other respects, a propriety in doing so.

It is true, there is a peculiarity in the form of the Papal government, from the fact that the temporal head of the State is also the spiritual head of the Roman Catholic Church. As is well known, the most important political body in the Roman States is the Sacred College of the Cardinals, who are the princes of the church. They are seventy in number, the same in number as the disciples sent out by the Great Founder of the Christian faith to preach the gospel to the world. Six are cardinal bishops, fifty cardinal priests, and fourteen cardinal deacons. I believe the number has been invariable for two hundred and fifty years, though it is not always full. All vacancies are filled by the Pope, who is chosen by the cardinals from their own body. The government is, therefore, an unlimited elective monarchy, or, if you please, a hierarchy, of which the Pope is the head.

The government is administered, under the direction of the Pope, by the Secretary of State, who is a cardinal. He is aided by several departments, bureaux, or boards, the chief of which is the Camera Apostolica, corresponding with our Treasury Department. It is under the charge of the Chamberlain, who is assisted by a number of cardinals and subordinates of different grades. There is also the Buon Governo, charged with the municipal police of the States; the Sacra Consulta, to which is intrusted the civil and political administration of the provinces; and the Sacra Rota, the great court of appeals in judicial proceedings. There are several more of these boards, of which I do not remember the names or the functions; but they are all under the direction of cardinals. The Chamberlain is the only one of these executive officers who is appointed for life; and the reason for the distinction is, that he administers the government on the death of the Pope for nine days, when a new election takes place; and during that period, he has the privilege of coining money in his own name. The Secretary of State, who is the *Prime Minister* and the confidential advisor of the Pope, besides having the gen-

eral direction of the administrative functions of the government, presides especially over the *Sacra Consulta*, or the department for the provinces—to give it a name suited to its functions.

There is another class of official dignitaries of high rank, under the Papal government—the prelates. They are always of noble birth, but not always in holy orders. There are some two or three hundred of these dignitaries employed in various departments of the government, civil or ecclesiastical. The post of prelate often opens the way to higher preferment, and is next in importance to a membership of the Sacred College. These are the great officers of the government.

They usually, if not uniformly, occupy posts under the government. Some of them are governors of provinces, under the denomination of delegates; and many of them are employed in the executive departments. Some of them become cardinals; but I should not consider it accurate to say of them as a body, that they were undergoing an ecclesiastical apprenticeship.

Let me now turn to the political divisions of the Papal States.

The Papal dominions are divided into twenty provinces. The first is the *Comarca di Rome*. The other nineteen are divided into legations and delegations. The former are six in number, and have each a cardinal to preside over them. The latter are thirteen in number, with prelates as their presiding officers. Each province is divided into communes, with peculiarities of local government.

In the provinces, the legations and delegations have a council, (*Congregazione di Governo*), consisting of the *Gonfaloniere*, or mayor, of the chief town, and from two to five councillors, according to the magnitude and importance of the province. They are named by the Pope, and hold their office for five years. The councillors have no vote; but when they differ in opinion from the presiding officer of the province, their reasons are reduced to writing, and sent to the Secretary of State.

Some of the delegations are divided into districts, with governors subordinate to the delegates. Each district is again divided into communes, with their ancient magistrates and councils. These councils are close corporations, the members of which are self-elected, subject to the veto of the delegate, and retain their seats for life. A *Gonfaloniere*, or mayor, elected from their own body by themselves, presides over them. Of these communes there are some eight or nine hundred, if I remember accurately, with similar forms of administration.

Thus it will be seen that the whole government is as far removed as possible from popular influence. It is from the centre to the extremities founded and administered upon the principles of a close corporation; and this is its chief peculiarity.

The administration of justice partakes of the nature of the political organization. It is founded on the basis of the *Corpus juris civilis* and the *Corpus juris canonici*—the civil and canon law. All criminal proceedings are conducted with closed doors, and the testimony taken in writing. The accused is entitled to the aid of an advocate, called the "*avvocato de poveri*," (the advocate of the poor,) who is appointed by the Pope and paid by the government. Imprisonment is the chief punishment for crime; fines are rarely imposed; there is no such thing as liberation on bail; and the whole administration of criminal justice is so dilatory, that there are always a very large number of persons imprisoned and awaiting their trial.

In all I have said, it will be readily seen how much the present head of the Papal States has to reform—in the frame of the government, in its administration, and in criminal jurisprudence. There is no participation by the people in the administration of public affairs. In Tuscany, Napoleon introduced publicity in criminal proceedings, and it has survived all succeeding changes of the government. In Rome it is excluded. Whether it was introduced there by Napoleon after the deposition of the Pope and the establishment of the kingdom of Italy, I do not remember, but I have no doubt that it was.

What changes the Pope contemplates, how far he proposes to allow the people to participate in the administration of public affairs, through the choice of their own magistrates and the enactment of their own laws, I have until very recently considered doubtful—nor is the extent of the reform he contemplates very distinctly understood now. It will be recollected that a few months ago he called together a council of delegates from the different provinces. I read his opening address to them with great care, supposing it would contain an outline of the political changes he contemplated. He stated that he had called them together for consultation,

which seemed to exclude the idea of legislation; that extravagant expectations had been entertained as to his purposes, and that he intended to transmit to his successors unimpaired the authority he had derived from those who had preceded him. Not long before this annunciation was received, I was invited to attend a public meeting in the city of New-York, called to express the general sympathy which was felt in his measures of reform. Not being able to attend, I addressed a letter to the committee of arrangements; and there were several other letters written by gentlemen of distinguished character, and some of them occupying high official stations. Not feeling at that time quite sure of the sequel, I did not indulge in the enthusiastic expressions which some of the letters contained. I endeavored to render the Pope full justice. I desire to do so now. And I must say, that the recent intelligence from abroad justifies all the expectations which have been entertained in respect to his contemplated measures of reform. He has already done much for good government in Italy. He arrayed himself boldly at the outset against the influence of Austria—an influence which, since the general pacification of Europe, in 1815, has been a perfect blight upon the growth and progress of popular freedom. He has resisted fearlessly the designs of that government upon the independence of the Roman people. He has refused to the Austrian troops a passage through his dominions for the purpose of aiding the King of the Two Sicilies in putting down the struggles of the Neapolitan and Sicilian people against the narrow-minded tyranny by which they have been oppressed. He has done more. He has formed a national guard in the Papal States; he has put arms into the hands of the Roman people, and he is preparing them by military exercises, for the assertion and maintenance of their own rights. He has, in a word, given an impulse to popular freedom throughout Italy; and it is owing in a great degree to him, that constitutional forms of government have been given to the people of Sardinia, Tuscany, and the Two Sicilies.

The late arrival affords us still more gratifying evidence of his movements. Two papers have been put into my hands, from which I will read brief extracts. The first is from a letter in the *Courrier des Etats Unis*, dated in Paris, which I will translate literally;

"The reaction of the revolution in Naples has been felt, as I foresaw, in the other parts of Italy. The King of Sardinia and the Grand Duke of Tuscany have also given to their subjects a constitution, modeled after the French Charter. Pius the Ninth has promised, in a proclamation, and in conversation with those around him, something analogous to it. In the mean time he has changed his cabinet, and has formed a ministry composed almost entirely of laymen. This is a great reform."

The other extract is from the letter of the European correspondent of the *National Intelligencer*, published in this morning's paper. I will read it.

"The good and conscientious Pope has had misgivings as to his power to grant a reformed constitution to his people, fearing that his doing so would interfere with the oath which he took at his accession to office, to hand down the *temporalities* of his kingdom uninjured to his successors. He submitted his doubts to a council of ecclesiastics learned in such matters, and the result is, a decision that his yielding to the wishes of the people and the spirit of the times, will not be an infringement upon his official oath. It is supposed, therefore, that the people of Rome will soon receive a constitution, founded on the same principles as those of Naples, Sardinia and Florence. His Holiness has advanced a great step, by his employment of well-qualified laymen to high positions in the State, which have hitherto been filled by ecclesiastics. Three vacancies lately occurred, and three liberal-minded laymen succeeded three churchmen. How much does the world owe to Pius IX.! His liberal conduct first put the ball of reform in motion; it is not destined to stop until it has regenerated Europe."

Thus it appears that the Roman people are to receive from the Pope a Constitutional Government. And, what I consider of great importance as a measure of reform, he has already begun to introduce laymen into his political councils. At the general pacification, in 1815, it was understood that the chief ministers of the Pope were to be chosen from the laity. This understanding was violated; and it has been one of the leading causes of public discontent in the Papal States. It has been for a very long period one of the reforms most earnestly sought for; and it may be hailed as the precursor of an ultimate separation of the ecclesiastic and secular branches of the Papal government, by conferring political offices on laymen, and confining churchmen to the exercise of their ecclesiastical functions—an arrangement favorable alike to the Church and the State, by promoting the purity of the one and the prosperity of the other.

While the Pope, has much to reform, he has much to contend against—not only

from the opposition of those who are hostile to all progress, but from the embarrassed condition of the finances of the Papal States. Some ten years ago, the revenues were about nine millions of dollars; two millions and a half were derived from internal taxes, chiefly on landed property; about four millions and a half from the customs, excise, &c.; about nine hundred thousand dollars from lotteries, and the residue from miscellaneous sources. Some of these revenues were collected at an enormous expense. The revenue from lotteries, for instance, which yielded nine hundred thousand dollars in the gross, cost about six hundred thousand in the collection, leaving only three hundred thousand in the treasury as an offset to the general demoralization of which they were the cause. In the same year, the expenditures exceeded the revenues about half a million of dollars. Four years ago, I understood the deficiency exceeded a million, and the preceding year a million and a half. From the difficulty of obtaining statistical information, I could not ascertain the amount of the public debt; but from the interest paid on it, amounting to about two millions and a half of dollars, exceeding one-quarter of the entire revenue of the Papal States, it must have exceeded forty millions of dollars. It cannot now, I think, be less than fifty millions. It may be much more.

Sir, this is a very heavy pecuniary burden for a small state. The whole superficial area of the Papal States is about thirteen thousand square miles—less than one-third the area of the State of New-York; and a population, according to the *raccolta* or census of 1833, of two million seven hundred thousand souls—about the same as the population of New-York. While Rome has two hundred and ten inhabitants to a square mile, from the difference in surface, New-York has but sixty. The population of the Papal States is very unequally distributed. Only about one-third of the surface is cultivated, and a considerable portion is very thinly inhabited. I doubt whether the population has much increased during the last fifteen years. In 1833, the city of Rome had about one hundred and fifty thousand inhabitants; in 1838, it had less than one hundred and forty-nine thousand—a slight decrease.

The Papal States have some commerce; but little is carried on in her own vessels. There are but two harbors for vessels of any considerable burden—Civita Vecchia, on the Mediterranean, and Ancona, on the Adriatic. The excellence of both ports is due, in a good degree, to the Emperor Trajan. There were other valuable ports once, but they have become useless for large vessels. Terracina, the ancient capital of the Volsci, was formerly a naval station of great importance; but is now obstructed by deposits of sand. The Porto d'Anzo—the ancient Antium—about midway between Terracina and the mouth of the Tiber, is also obstructed, and nearly useless, from the same cause.

There is but one navigable river in the Papal States—the Tiber. As there have been some allusions to it in the course of the debate, I hope I shall be excused if I make some references also to its condition as to commerce and navigability. It empties into the Mediterranean seventeen miles from Rome. As it approaches the sea, it divides into two channels. On the left arm stood the ancient Ostia. It has long since fallen into ruins, and a modern Ostia stands near it; but, from the unhealthiness of the place, it is almost deserted, and the channel of the river is nearly filled up. The right arm is navigable to the sea. On this channel stood the ancient city of Portus; but only the ruins are now visible, and the modern town of Fiumicino has risen up a mile and a half below. The channel is narrow, deep and rapid. The description of Virgil, as he makes *Æneas* first see the Tiber, is still applicable to it. I do not know that I can quote him accurately, but if I do not, there are gentlemen of classical learning on both sides of the Chamber who will correct me:

—“*fluvio Tiberinus ameno,
Vorticibus rapidis et multa flavus arena,
In mare prorumpit.*”

The description is not inaccurate: with rapid whirlpools, and yellow with earth, it bursts into the sea. The current is so rapid, that vessels could only stem it with strong winds; but they are now towed up by steamers. Vessels of small size—among them a steamer—go up to Rome, and at some seasons there is a good deal of freighting done on the river. Indeed, it is navigable for boats to its junction with the *Nera*, some forty miles above. But, from the rapidity of the

current near the city and below, deposits of sand are constantly obstructing the passage, and an annual appropriation of money is made to keep it open.

The exports of the Papal States are not large, but they are numerous. They consist of corn, oil, silk, skins, fruits, wood a substitute for indigo, which grows spontaneously in southern Italy, hemp, &c. Wool is exported in large quantities to England; and among other exports, is tobacco, of which they send abroad annually about three hundred thousand pounds.

They can scarcely be said to have a commercial marine. Some ninety vessels, averaging probably about eighty tons each, constitute the whole, excepting fishing smacks and small coasters. There are six merchant vessels in the city of New-York with an aggregate tonnage exceeding that of the ninety merchant vessels of the Roman States. This, however, we need not regret; for if we can extend our commercial relations with them, we shall do all the carrying, both for them and ourselves. Agriculture, the basis of all industry, is in a very depressed state, and from peculiar causes. The great peculiarity of the agriculture of the Papal States is the division of the champaign land into immense farms. The Campagna around Rome, called the "Agro Romano," (the Roman field,) the Maremma, extending from the frontier of Tuscany, along the coast, to the southward, and the low lands in other districts, are owned by a few persons. The farms usually contain several thousand acres. The entire Agro Romano, comprising more than one-fifth of the Campagna, contains over eight hundred and fifty square miles. This tract is in the hands of about forty farmers, or "Mercanti di Campagna," as they are called. The farms are worked on the "Mezzeria" system, or at halves, under the direction of *fattori*, or stewards, who occupy farm-houses on the land, while the owners live in the cities. The same system prevails in Tuscany, where it has worked tolerably well. In Rome it is thought exceedingly unfavorable to agricultural improvement. Something is attributable to the peculiarity of the Roman plain, in respect to climate and health, which renders it necessary to devote the greater part to grazing. In the winter it is covered with cattle and sheep—not less perhaps than a million of both, under the guardianship of shepherds and herdsmen. As the summer advances, the Campagna becomes too unhealthy to be inhabited, and the cattle are driven to the Sabine hills, and even to the mountains of the Abruzzi. When the harvest season arrives, the heat becomes almost intolerable; and multitudes of the laborers, who come down from the mountains to gather the harvest, perish from the fatal effects of the malaria. As soon as the grain is gathered, the Campagna becomes a desert until the summer heats are over. Neither men nor cattle are to be seen. The buffalo, who seem to be proof against the heavy pestilential vapors which the burning sun brings out from the humid earth, are almost the only inhabitants of the deserted plain from June to October.

With this imperfect agriculture, a complete monopoly is given to the rural proprietors by the corn-laws of the Papal States. When the price of flour on the Mediterranean is under \$9, and on the Adriatic \$8 25 per barrel, the introduction is prohibited. It is the same with wheat. When it is under about \$1 40 the bushel on the Mediterranean, or \$1 20 on the Adriatic, it is not allowed to be introduced. The operation of this system is to give the entire market to the Roman agriculturist, and by excluding the cheaper breadstuffs of the Levant and the Austrian provinces on the eastern shore of the Adriatic, to compel the Roman people in some districts, and in times of scarcity, to eat dear bread.

Notwithstanding the depressed condition of the industry of the Papal States, there is no country capable of a more rich or varied production; and if the measures of reform now in progress shall be carried out, and the social as well as the political condition of the people be elevated by the abrogation of bad laws, I know no State of the same magnitude which may hope for a higher prosperity.

But I look chiefly to commerce. Depressed as the industry of Rome is, I think something may be done to extend our commercial relations and intercourse with her, and perhaps also with Tuscany, lying on her borders. Great Britain has an immense trade with the Mediterranean. She sends every year fifteen millions of dollars in value of her own products into Italy alone, and probably, several millions more of foreign products, which she imports for re-exportation. A portion of this lucrative trade legitimately should be ours; and, I think we may obtain it, if we send a discreet and intelligent man to Italy.

2.—POPULATION OF FRANCE.

In our April number we gave an elaborate sketch of the agriculture and agricultural wealth of France; we now give some of its statistics.

Official returns divide the whole population into six classes—three degrees of ignorance and three of instruction—as follows:

IGNORANCE.

1st—Unable to read and to write	16,855,000
2d—Able to read, but not to write	7,097,000
3d—Reading and writing, but incorrectly	6,968,000

INSTRUCTION.

4th—Reading and writing correctly	2,430,000
5th—Having the elements of classical education	735,000
6th—Having completed their classical studies	315,000

Total 34,400,000

Of these, however, the following calculation shows that not one half were entitled to vote at the last election:—

The number of females in France is	17,232,000
Under 21 years of age	8,287,000
Of 21 years of age or above	8,956,000
The total of the male population is	17,168,000
Under 21 years of age	8,252,000
Of, or above 21 years of age	8,916,000
There are therefore 8,916,000 voters who are thus divided:	
1st—the working classes and paupers	6,585,000
2d—Manufacturing, trading and agricultural capitalists	927,000
3d—Learned professions, and independent incomes	425,000
4th—Paid Officials, army, navy and pensioners	379,000

Total 8,916,000

Of the 6,585,000 belonging to the first class, 5,591,000 are in a state of ignorance, most of them unable to read or write; and in the fourth class there is also a sad deficiency of knowledge, as out of 1000 recruits, 500 do not know their alphabet.

MISCELLANIES.

I.—GALVESTON AND RED RIVER RAIL-ROAD.

An act has passed the legislature of Texas incorporating the above road, and efforts are now being made in that state in order to carry out the enterprise.

An address has been made setting forth the claims of this road, from which we take the liberty of extracting:

The contemplated road is designed to connect the navigable waters of the Red River above the raft, and all that immediate section of valuable and productive country lying south of it, by the most expeditious, safe, and economical means of transportation to this city. Its precise route is a matter which can only be ascertained by a careful survey, and must be finally decided by the agents of those who shall furnish the capital for its construction.

It is believed safe to expect that the country on each side of the road, for at least 50 miles distant, will seek its facilities by this route in preference to any other that can be obtained. The counties last named contain, according to the assessment rolls returned for 1847, 9,473,930 acres of land, which may be set down at ten millions of acres; and allowing the estimate of the increase to be five dollars per acre, as an average, and we have an increase of the value of the real estate in these counties amounting to the sum of forty-five millions of dollars. This es-

timite will give to the district of country mentioned, an increase of value, in real estate alone, of sixty millions of dollars.

We would first call your attention to the present condition of that portion of the state through which the proposed road will pass. The Northern or Red River counties of this section of the state, including the counties of Grayson, Fannin, Lamar, Red River, Bowie, Cass, Titus, Hopkins, Hunt, Collin, Denton and Dallas, are now estimated to raise about 40,000 bales of cotton, which finds its way to market mostly by Shreveport, at an expense, including hauling and freight, of about five dollars per bale, and is exposed to all the losses, damages and uncertainties of the Red River navigation. The counties named, are capable of producing not only an almost incalculable amount of this great staple, but also an immense amount of wheat and other cereal grains, tobacco, flax, hemp, pork, fruits and other domestic products of the farm, which will not bear transportation to market. They contain, according to the tax returns of the assessors in 1847, 3,674,719 acres of land, and the probability is that five million of acres would be a nearer approximation to the truth. These lands now average a nominal value of fifty cents per acre, and could not be sold at half that price for cash. With such facilities to market as a railroad to Galveston would give, it is safe to estimate the quantity of cotton produced five years hence at two hundred thousand bales, and the other products of the country at an equal amount in value. The lands would rapidly appreciate, and the average may be safely estimated at three dollars per acre, thus increasing the wealth of the country, by the appreciation of real estate alone, at least ten fold; to this should be added the reduced expense of transportation to market, which would be about one half, besides the advantages of certainty, safety and despatch, and which would have saved the country, during the past season, at least one hundred thousand dollars. This same district of country has lost, by delays in getting the cotton to market, during the past winter, in season to take advantage of the fair price of cotton, at least four cents on the pound, which, estimating the cotton at four hundred pounds to the bale, makes a further loss of eighty thousand dollars. So that we have a loss to the counties named, during the past season, of at least one hundred and eighty thousand dollars for the want of those facilities to market which the projected road would afford. If the advantages which we have above stated, (and we believe them to be but a small part of the truth) can be obtained by the construction of this road, we ask, what amount of land can you afford to give, to ensure its construction? With a donation of the half, you will have made a large speculation, by an appreciation of five hundred per cent. on the whole quantity.

To our fellow-citizens of Galveston, we would say, this enterprise demands and should receive your most hearty and sincere co-operation. Its success will fill your wharves and ware-houses with produce and your harbor with shipping—with the exception of New-Orleans, you will rival every city south of New-York. Its success will excite the inhabitants of the Brazos, the Colorado and the Gaudalupe to lend a helping hand for the construction of those branches, which a liberal charter permits this company to construct; and the entire trade of this state, with the exception of the immediate coast, will pour its wealth into your city. The extensive navigation of Red River, west of the terminus, will bring you the trade of New Mexico and Chihuahua, which are sure to become of immense value.

2.—STATISTICS OF THE QUARTER-MASTER'S DEPARTMENT, N. ORLEANS.

Mr. Clairborne has compiled the following from the books of the department.

Eight steam-ships are owned and regularly employed in transporting munitions of war, troops, &c.; ten steam propellers; two ships; two brigs; one barque; twenty seven schooners. Besides the above, at various times have been chartered, twenty-two steam-ships, seven ships, nineteen barques, thirty-nine brigs and seventy-five schooners.

STORES SHIPPED FROM NEW ORLEANS TO ARMY FROM JULY 1, 1847, TO MAY 1, 1848.

Bushels of Oats,.....	465,542
Bushels of Corn,.....	117,606
Pounds of Hay,.....	6,105,637
<i>Barrels of Coal</i> ,.....	149,226

Horses,.....	3,733
Mules,.....	615
Lumber assorted, number of feet,.....	775,148
Iron, " " " ".....	732,062
Oils, " " gallons,.....	11,600
White and Black Lead, pounds of.....	28,925
Nails assorted, pounds of.....	102,973
Rope " " of.....	116,738
Wagons, number of.....	475
Mule Shoes, number of.....	83,000
Horse " " of.....	31,000
Mississippi water, gallons of.....	98,470
Copper, pounds of.....	36,064
Leather, pounds of.....	50,000
Tar, barrels of.....	500

In addition to the above, about 25,000 barrels of subsistence stores have been sent forward, and 200,000 packages of Quarter-Master's stores, camp and garrison equipage, ordnance stores, and clothing for the Army, which it would be impossible to enumerate, in this brief statement.

The amount of fuel and forage purchased in the city of New-Orleans during the period stated, as follows, viz :

Coal, barrels of.....	290,000
Oats, bushels of.....	440,000
Corn, bushels of.....	100,000
Hay, pounds of.....	6,050,000

During the same period some 15,000 troops and 3,000 teamsters, with their arms, ammunition, camp equipage, &c., have been sent out from this point, besides the provisions for the army, ordnance, military stores, &c.

3.—MANUFACTURES ON THE OHIO RIVER.

Important elements of a manufacturing district, says a writer of a series of papers in the *Louisville Journal*, are *facilities for moving man and matter, and proximity to the raw material and to the market*. These are resolved into cost of transportation.

General impressions on this point are very erroneous; and, as the result of my statistics may far exceed the belief of those who have not investigated the subject, I give the facts for the full examination of all who feel an interest in them.

In these articles I refer specially to the cost of manufacturing and vending cotton goods, because this branch of manufacturing is of more importance and better understood than any other.

Some years since a pamphlet was published in England, by Mr. Graham, on "The Impolicy of the Tax on Cotton Wool." In this is an affidavit of Mr. Gemmell, of Glasgow, who states, "that, although he was for several years in the habit of supplying Chili with cotton domestics, he has latterly been obliged to abandon the trade, in consequence of being unable to compete with the manufacturers of the United States."

Chili is a market equi-distant from the two competitors for her trade. What gave New-England such an advantage over cheap labor, cheap coal, and cheap capital of England? The difference in the cost of transportation on the raw material.

In 1839-'40, Montgomery gives this estimate of the cost of importation of cotton to the British manufacturer, the first cost of the cotton being 14 cents per pound.

Charges on shipment, ...	4 per cent.
Freight and insurance, ...	12½ "
Importer's profit, ...	5 "
Inland carriage, ...	1½ "
Duty, ...	4½ "
Total average, ...	27½ "

While the average cost to the N. England manufacturer is stated at 11 per cent.

The estimate of the actual charges of manufacturing in the two countries gives an average of six mills per yard against us; yet, taking both charges into the estimate, the net advantage was three per cent. in our favor; and besides this, our goods were the best.

Since 1840, the British Government has been obliged to take off the duty, but it could not lessen the cost of labor, of power, or of capital. The wages of the operative then were barely enough to support life; the cost of coal must increase as the seams nearest the surface are exhausted; and it is doubtful whether the capital then invested in the cotton mill was paying any interest.

The changes that have since occurred on this side of the water have all been in our favor; that is, so far as the cost of manufacturing is concerned. More experience has given us greater skill; we have more system, and more economy; new facilities of intercommunication have brought our producers and manufacturers of cotton nearer to each other and lessened the cost of their mutual exchanges; but, more than all, the cost of labor, in which England had so much the advantage, has been lessened over one-half: that is, less than one-half is now required. Besides, of late years the supply of cotton has been so near the demand, that the price has fallen from 14 cents per pound to an average of 8 or 9 cents; as the cost is reduced our relative advantage is increased.

From these facts we have this corollary: that, as the cost of labor, power, and material is reduced, the cost of transportation rises in importance.

If England cannot profitably compete with us in the Chili market, certainly she cannot compete with us here; for the width of the Atlantic gives us a protection, directly or indirectly, of at least 15 per cent. *ad valorem*.

In point of fact, just as fast as the American manufacturer is able to supply the home demand in any article, the English manufacturer is driven from our market, unless, to raise money or to break down a rival, he is prepared to sell at less than cost. It is to be hoped that the wages of labor in this country will never be so low that we can compete with China in embroidered shawls or ivory trinkets; or with France and Germany in tapestry or laces made by hand. In such fabrics the cost of transportation bears but a slight proportion to the cost of labor.

It is clear, then, that England cannot sell coarse, heavy, and cheap goods in this valley in competition with our own manufacturer. Let us see if New-England can.

In 1821, as I am told, the first mill for spinning cotton yarn on an extensive scale was established on the Ohio. Now, who sees in our stores a hank of English or Eastern cotton yarn? The same cause that has produced this result—that is, the cost of transportation—must, in a few years, build up all the mills we need to supply us with “domestics.”

To see what the precise inducements are to start such a mill here, I give the following details of the cost of transporting cotton from its point of production to us and to the New-England mill, and of the goods from the mill to us. It is clear that the difference in the first and the amount of the last give the sum of our advantages in this item, at least to the extent of our home market.

I base my estimates on a mill of 10,000 spindles for convenience, and because that is near the most economical size. It will be borne in mind that the calculation includes the cost of machinery for preparing the cotton and weaving the goods.

At almost any point on the Ohio river the cost of building is less than in Massachusetts. We have stone, lime, clay, and generally, lumber on or near the spot. There the lumber and lime is brought from Maine; but few positions furnish good clay for brick; and granite is not as easily worked as our lime or sandstone. The moment there is a demand for it, machinery can be made here 20 per cent. cheaper than at the East. The cost now would be nearly this:

The factory building of brick or square stone rubble, . . .	\$30,000
House for superintendent, . . .	3,000
Twelve boarding-houses for 225 operatives, . . .	10,000
Warehouse and store, . . .	2,500
Engine, gearing, and pipes for heating mill, put up, . . .	8,000
Machinery, at \$12 per spindle, . . .	120,000
	\$173,500

MISCELLANIES.

Brought forward,	\$173,500
Here a working capital, sufficiently large to lay in a stock of cotton for five months, is	46,500
Capital stock,	\$220,000

This estimate is larger by \$20,000 to \$30,000 than that made by persons who have far more practical knowledge on the subject than I have.

The longer the material and its product are *in transitu*, or, in other words, the further the manufactory is from the raw material and the market, the larger must be the working capital; and the interest on the difference is fairly a part of the cost of transportation. And besides, as England and New-England are obliged to enter the cotton market once a year, and at the same time, and at the very time when our other great staples are ready for shipment, prices and freights are then generally at their highest rates; sometimes, as we have seen, sufficient means of transportation cannot be had at all; to guard against this contingency, as well as the fluctuations of price, many mills keep a heavy surplus stock. We can command the market at all times; we are always ready to contract, and can select our own time to receive the cotton. We are here, also, at the point of consumption; we cannot for years supply the home demand, and our goods will be taken as fast as they are made.

With these facts in view, it is very safe to say that the New-England mill requires a working capital of \$100,000 more than ours; but, to be altogether within the mark, put it at \$50,000; the interest on this is the first item of saving or advantage to be carried out—say per annum \$3,000. As we can turn over our capital more than once a year, and its earnings at each time will exceed 6 per cent., we might with propriety make the item much larger.

At Lowell there are forty-five mills, containing 253,456 spindles, and with a capital of \$11,490,000, or, over \$450,000 for every 10,000 spindles. If \$50,000 is deducted for capital required to purchase the power, \$50,000 more to cover the difference in communicating the power and the additional cost of buildings, the working capital would seem to be \$130,000 over that required here by my estimate. But I am not advised as to how much of this capital is required to enable the mill to sell on credit, or whether the surplus fund, usually laid aside out of profits, is sufficient for this purpose. The Lowell corporations rarely publish the amount of their reserved funds, or even of their profits, unless when they are remarkably low.

The mill in question will turn out on the average, two tons of goods a day—say 600 tons per annum. The English estimate of waste and loss is one-sixth; our rule gives 89 pounds of goods for 100 pounds of cotton; by this, the mill will require 666 tons of cotton per annum.

The following estimate of the cost of bringing dry goods to Louisville from Boston, *via* New-Orleans, was obtained from one of our largest dry goods houses, and I feel confident that the rates are below the average:

Boston wharfage per bale,	02½
Freight to New-Orleans per bale,	45
Charges at “ “	30
Insurance, 2 per cent., on \$66, or on cost and 10 per cent. added,	1 32
Interest <i>in transitu</i> , 40 days,	40
Exchange ¼ per cent.,	30
Freight to Louisville,	62½
	\$3 42
Add average cost on the bale from the mill to and at Boston, at least,	40
	\$3 82

The bale, 4-8 brown cotton, of 750 yards, average cost \$60; 3 yards to the pound. This gives over ¼ cent to the yard, 1½ cents to the pound, and \$30 per ton.

There are, however, but few houses that ship by New-Orleans, and at times when freights are low; altogether the largest portion of the brown cottons and prints brought to the central West come from the Eastern agent or jobber, and by the lakes or across the mountains.

This is the ordinary course of trade, and there is no reason why we should

not base our estimates on what is usually done, if the same system is likely to continue.

By these last routes, as every dry goods merchant (wholesale) can satisfy himself by reference to his books, the average freight from the eastern cities is from two-thirds to three-fourths of one cent per yard. If to this is added the coast-wise freight, insurance interest, profit of the jobber, or commission of the second agent, the cost will swell up to at least 1 cent per yard, 3 cents per pound, or \$66 per ton.

But, as I have often been told, the agent at Baltimore will sell domestics just as low as they can be had at Boston or Lowell, and the Philadelphia jobber will often sell lower to draw in customers, as he relies for his profits on other goods. All very true; but a moment's reflection will satisfy any man of the fallacy of this reasoning. The manufacturer may wish to get rid of his surplus, and find it his interest to pay the transportation to, and the commission of an agent in a remote market, but this does not lessen the actual cost of the transportation or agency. The jobber may entice a customer into his store by selling silver at fifty cents an ounce, but this does not prove that the ounce of silver is actually worth less than a dollar. The same kind of argument is often applied to cost of transportation on our river. The Peytona will ask \$5 from a passenger to Louisville, who calls her in at Brandenburg, and the price would be the same if he got in at Cairo; yet the writer on the western carrying trade would be laughed at, were he to state that the cost of transportation from Cairo and Brandenburg to Louisville was the same. Coal often sells for a less price at St. Petersburg than at Newcastle; yet no one has attempted to show that the shipment of coal a thousand miles lessens its cost, or that St. Petersburg is the proper site of manufactures, because coal was sold there at a particular day cheaper than at the English coal mines. The balance sheet of every business must show the profits or losses in each of its branches. The high prices demanded by the larger boats for way-passengers and freight have introduced the river packets, and the extra costs paid by the eastern manufacturer are now building up the western mills.

To return to the figures: the mill given will consume 666 tons of cotton per annum.

Freight from the cotton districts of Nashville, Florence, Tusculumbia, and points on the Mississippi river in Tennessee and Arkansas, and on the Arkansas river, are about the same to Louisville as to New-Orleans. As the river packets multiply, the rates in this direction will probably be lower. Besides, as our agricultural exports increase, the return boats will run light and charge less. Our mill, then, will save the charges on the cotton at New-Orleans and the cost between that city and the New-England mill. I have not access to a series of New-Orleans prices-current, but I presume the following estimate will not be wide of the mark:

Drayage, storage, brokerage, and commission of agent or merchant at New-Orleans per bale of 450 pounds, ...	\$1 00
Insurance on \$36 or 8 cents per pound, ...	50
Freight $\frac{1}{2}$ cent per pound, ...	3 38
Interest, 45 days, ...	27
	\$5 15

I might add 1 per cent. loss on exchange, as the cotton is generally paid for by 60-day bills—

Or 1 14-100 cent per pound, on per ton, ...	\$22 00
Add charges in Boston, ...	10
Average freight to the mill, ...	2 70

Total per ton, ...	\$25 80
666 tons required at \$25 80 gives	\$17,182 80
Add saving in capital per annum	3,000 00
Add minimum freight on goods or \$30 per ton on 600 tons	18,000 00

Minimum advantage, ...	\$38,182 80
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But if we add the ordinary freight on the goods, or \$60 per ton, we have the maximum advantage of \$56,182 80, or an average of \$47,182 80 on a capital of \$20,000, or near 21 $\frac{1}{2}$ per cent.

I say nothing here of the great saving in fuel and in food; to these points, and to giving an aggregate of advantages, I propose to devote another paper.

I believe the foregoing estimates are within the truth, and that I have not been able to get at all the items of cost; indeed, many of these are of such a character that they cannot well be specified; such, for instance, as the expenses and time of the merchant who goes abroad to make his purchases, occasional loss on exchange, and all the contingencies to which a trade between distant points is subject.

It will be noticed that nothing is said here of disadvantages; there are some, and I will endeavor hereafter to state them fairly, and then perhaps you will be surprised to see how few there are, and how easily these can be surmounted.

I have been furnished with the following estimate, which nearly corresponds with the foregoing, and from a source perhaps more reliable than any other in New-England. The comparison is between Massachusetts and Pittsburg:

A mill of 10,000 spindles will turn out 4,000,000 yards of No. 14 sheetings or shirtings, and consume 1,400,000 pounds of cotton in one year. The difference in the cost of the raw material and the cost of sending the manufactured goods to the West, including interest, is, as near as can be estimated, *one cent per yard*, or \$40,000 in one year's work.

If there is but even 15 per cent. advantage (and I challenge the production of *facts* to show that there is not 20 per cent.) in this single item of cost of transportation, how long before our men of capital, who, at most, can get 10 or 12 per cent. interest on moneyed loans, will engage in manufacturing? It needs but the establishment of a single mill on the Lowell system and the making of a single dividend, to draw the attention of every man among us who has spare funds sufficient to buy a share of stock.

S.

4.—STATISTICAL COLLECTIONS OF THE SEVERAL STATES.

It is impossible to know as minutely as the purposes of trade and legislation require, all the statistics of the states of this Union, from the reports of the general government, however perfect they may be. The home trade can seldom appear in the figures of government, as it is too far removed to collect with facility all the minor details of the movements of states and cities, which make a part of, and influence the commerce of the country. Each state should in fact have its own department of statistics, and it would be very easy from all the reports to make up a general summary at Washington every year.

In this view we take pleasure in calling attention to the initiatory movement made in Louisiana, for the establishment of a *Bureau of Statistics*, and publish, for the information of all, and in the hope of getting returns from some, the circular of the department.

BUREAU OF STATISTICS—DEPARTMENT OF STATE,

New-Orleans, 1st July, 1848.

SIR—A Bureau of Statistics having been established, and the undersigned entrusted with its charge, he begs to invite from citizens in every section of the state, such information as they can impart in regard to its present condition and past history.

The appended queries will give an idea of the character of the facts required, and will be suggestive of others. The plan of the Bureau contemplates *every kind of information concerning the state*, and it will be in the power of most persons to communicate something, upon one or more of the heads. It is of very great importance that the report, contemplated to the next legislature, be *complete*.

The aid of the members of the legislature, editors, public officers, citizens, &c., in all the parishes, is invoked, and will be most gratefully acknowledged.

Donations of old files of newspapers, records, etc., to be deposited in the Bureau, will be thankfully received and acknowledged.

J. D. B. DE BOW.

- I. Time of *settlement* of your parish or town; dates of oldest land grants; number and condition of first settlers; whence emigrating; other facts relating to settlement and history.
- II. *Indian names* in your vicinity; what tribes originally; what relics or monuments of them; if Indians still, in what condition?
- III. *Biography, anecdotes, &c.*, of individuals distinguished in your vicinity in the past for *ingenuity, enterprise, literature, talents, civil or military, &c.*

- IV. *Topographical description* of your parish, mountains, rivers, ponds, animals, quadrupeds, birds, fishes, reptiles, insects, &c., vegetable growths, rocks, minerals, sand clays, chalk, flint, marble, pit coal, pigments, medicinal and poisonous substances, elevation above the sea, nature of surface, forests, or undergrowth, what wells and quality of well water, nature of coasts, does the water make inroads, mineral springs, caves, etc.
- V. *Agricultural description* of parish; former and present state of cultivation; changes taking place; introduction of cotton, sugar, rice, indigo, tobacco, grains, fruits, vines, &c., &c.; present products; lands occupied and unoccupied, and character of soils; value of lands; state of improvement; value of agricultural products; horses, cattle, mules, hogs, and whence supplied; profits of agriculture, prices of products; new estates opening; improvements suggested in cultivation, and new growths; improvements in communication, roads, bridges, canals, &c.; kind and quantity of timber, fuel, &c.; state of the roads, summer and winter; kinds of enclosures, and of what timber; manures; natural and artificial pastures; agricultural implements used; fruit trees, vines, and orchards; modes of transportation; extent of internal navigation; levees, &c.; modes of cultivating and manufacturing sugar in use.
- VI. Instances of *longevity* and *fecundity*; observations on diseases in your section; locations, healthful or otherwise; statistics of diseases; deaths; summer seats, &c.
- VII. *Population* of your parish; increase and progress, distinguishing white and black; Spanish, French, American, or German origin; foreigners; classes of population; number in towns; growth of towns and villages, etc.; condition, employment, ages; comparative value of free and slave labor; comparative tables of increase; marriages, births, &c.; meteorological tables of temperature, weather, rains, &c.
- VIII. *Education and Religion*—Advantages of schools, colleges, libraries enjoyed; proportion educated at home and abroad; expense of education; school returns; churches or chapels in parish, when and by whom erected; how supplied with clergy; how supported and attended; oldest interments; church vaults, &c.
- IX. *Products in Manufactures and the Arts*—Kinds of manufactures in parish; persons employed; kind of power; capital; wages; per centum profit; raw material; sugar and cotton machinery and improvements; kind and value; manufacturing sites, &c.
- X. *Commercial Statistics*—Value of the imports and exports of Louisiana with each of the other states of the Union, as far as any approximation may be made, or data given; growth and condition of towns; increase in towns, &c.
- XI. *General Statistics*—Embracing banking, railroads, insurances, navigation, intercommunication; learned and scientific societies; crime, pauperism, charities, public and benevolent institutions; militia, newspapers, &c.; application of parish taxes; expenses of roads, levees, &c.; number of suits decided in different courts; expenses and perfection of justice; number of parish officers, lawyers, physicians, &c.
- XII. Date, extent, consequences, and other circumstances of droughts, freshets, whirlwinds, storms, lightnings, hurricanes, or other remarkable physical events, in your section from remote periods; other meteorological phenomena; changes in climate, &c.
- XIII. Literary productions emanating from your neighborhood; your associations, if any; what manuscripts, public or private records, letters, journals, &c., or rare old books, interesting in their relation to the history of Louisiana, are possessed by individuals within your knowledge. State any other matters of interest.

Our book table is much neglected this month. Our advertisements are left out, for which due atonement shall be made to the parties. The article on silk will be continued in our next. We have several other valuable papers on the table for publication.

Hon. H. Johnson and Hon. S. Downs will receive acknowledgments for important Congressional papers. There are several books and pamphlets on our table, of which notices shall appear in the August number.

It pleases us to inform our subscribers that with this number we begin a new era in the publication of the Review. There shall be no more delays, but the utmost regularity, and an improved monthly issue. Let our friends show themselves by extending the circulation and increasing the *facile* of the work. We pray for prompt and punctual remittances from all.—[Editor.]

Several lamentable typographical blunders were permitted in consequence of the Editor's absence, in the April number, particularly in the article by our friend J. P. Benjamin, on the *Saccharometer*. We almost determine to republish his valuable paper. Similar errors are found in the article on *Silk*.

THE
COMMERCIAL REVIEW

OF THE
SOUTH AND WEST.

ESTABLISHED JANUARY 1, 1846.

J. D. B. DE BOW, EDITOR AND PUBLISHER.

Volume VI.

AUGUST, 1848.

No. 2.

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THE COMMERCIAL REVIEW.

Volume VII.

AUGUST, 1848.

No. 2.

Art. I.—CENTRAL AMERICA.*

—— “Declined to dust!
But where they dwelt, the vast and sumptuous pile
Bespeaks the pageant of the splendid trust.
Their sceptre broken and their sword in rust,
Have yielded to the stranger: Empty halls

To meditate amongst decay——

—— There to track
Fallen states and buried greatness; o’er a land
Which *was*! ——”

IN the antiquities of our own country, how much is there to excite the deepest interest and the most profound speculation. But yet, how prone are we to wander away from the things which are familiar, discarding them as worthless, to fall into ecstasies and wonder in regard to those afar off, and around which the “enchantment” of “distance” hangs alluringly. If we can but wander to Palmyra, or by the Nile, there is at once an acme in the enthusiasm and frenzy of our natures. The noble dead, as of a hundred generations, seem crowding around us; they speak in marble and in monument; in hieroglyphic and in ruin. There comes an inspiration with that language. All feel it.

Alas! the *old* world, with its hallowed associations and memories, have been admired and mourned, and sung by genius, and poetry, and romance, for generations and generations. But where is the pen and the pencil that have seized upon the marvels of the *new* world, explored them eagerly, and traced in living colors the memorials of its myriad and *unknown* dead? A gloomy curtain hangs over all the past. We see nothing, and we know nothing behind. We seek in

* This constitutes No. 5 of our articles upon AMERICA, viz., *Progress of American Commerce*, vol. ii. COMMERCIAL REVIEW; the *Great West*, vol. iv.; the *West India Islands*, vol. v.; *South American States*, vol. vi. No. 1. In these will be found a mass of the latest information on every important point. We shall follow with *British America*, *Russian America*, and *Mexico*. In the preparation of these papers, we acknowledge the great assistance derived from the ponderous and invaluable collection of materials made by the indefatigable Mr. McGregor, of London. His works deserve a place in every library.

vain to remove that curtain. But fancy, and conjecture, and reason will not be still. There are monuments which betoken an antiquity, and a far back antiquity, of which all other evidence is lost. We are pointed to men, and heroes, and nations, gone forever from the spots we inhabit! They were not as we, yet were they not less, perhaps, in many exalted characteristics. A giant race of animals were contemporary; of which there remained to us but the fossil bones. Who were these men—whence did they emanate—what is their antiquity—how their civilization, arts and progress—in what manner has the sun of empire and existence settled upon them forever? What lessons might this antiquity teach, but what know we of it all? Yet we wander away to Greece and to Rome to hunt after dead men and their works! Dead men and nations, and their works, are scattered every where around us, unheeded, we had almost said, contemned.

With the map of CENTRAL AMERICA extended upon the table, for it is to this particular field we are to confine ourselves now, it would be impossible not to fall into something like the train of thought with which our paper opens. We have only to regret that space and time prevent its indulgence to the extent our humour inclines. The reader will run far beyond the meagre limits of our sketch.

Central America, or Guatemala, extends from about 8 to 18° north latitude, and 82 to 94 west longitude. The area, including the Mosquito territory, previously described by us,* is 120,000 square miles. Mexico, Honduras, New-Granada and the oceans bound it.

We shall sketch the antiquities, as they are called, of this region, and then descending to the present times, describe the appearance of the country, the soil, climate, population and resources.

Central America has been explored by M. Dupaix, Del Rio, M. Waldeck, and our own countryman, Mr. Stephens, whose lately published volumes upon the subject have been received with extraordinary interest throughout the world, and have been universally read and admired. None of these travellers, however, claim to have more than penetrated the crust, whilst the deep bowels remain as for ages undisturbed. Whole regions have been but slightly and imperfectly scanned. What new wonders they may reveal, may be conjectured from past results. Is it improbable the key will yet be found? The pyramids which were dumb to Homer and Herodotus—to the men who gazed stupidly upon them for ages, have been taught to speak a language at last a child might understand. The Rosetta stone may exist here too.

In reference to this point, Mr. Stephens relates an extraordinary statement, made to him by a certain *padre*, about the truth of which he does not seem in any degree faithless. The reader may receive it with as much allowance as he pleases.

"The *padre* asserted, that four days on the road to Mexico, on the other side of the great Sierra, was a living city, large and populous, occupied by Indians, precisely in the same state as before the discovery of America. He had heard of it many years before at the

* See Commercial Review, vol. v. Art. West India Islands, &c.

village of Chajul, and was told by the villagers that from the topmost ridge of the Sierra, the city was distinctly visible. He was then young, and with much labor climbed to the naked summit of the Sierra, from which, at the height of ten or twelve thousand feet, he looked over an immense plain, extending to Yucatan and the Gulf of Mexico, and saw, at a great distance, a large city spread over a great space, and with turrets white and glittering in the sun. The traditional accounts of the Indians at Chajul, is that no white man has ever reached this city; that the inhabitants speak the Maya language; are aware that a race of strangers have conquered the whole country around, and murder any white man who attempts to enter their territory. They have no coin or circulating medium; no horses, cattle, mules, or domestic animals, except fowls, and the cocks they keep under ground to prevent their crowing being heard.

"If he is right, a place is left where Indians and an Indian city exist, as Cortez and Alvarado found them. There are living men who can solve the mystery that hangs over the ruined cities of America, perhaps who can go to Cospan and read the inscriptions on its monuments. No subject more attractive and exciting presents itself to my mind, and the deep impression of that night will never be effaced.

"Can it be true—being now in my sober senses. I do verily believe there is much ground to suppose that what the padre told us is authentic. That the region referred to does not acknowledge the government of Guatemala—has never been explored—and that no white man ever pretends to enter it, I am satisfied. From other sources we heard that from that Sierra a large ruined city was visible; and we were told by another person, who had climbed to the top of the Sierra, but on account of the dense cloud resting upon it, had been unable to see anything. At all events, the belief at the village of Chajul is general, and a curiosity is roused that burns to be satisfied."

The ruins of Central America have been thus distributed:

1. *Ruins of Copan.*—These are in a fertile valley, and are on the banks of a small stream called the Copan, tributary to the Motagna. They extend along the river two miles. The temple here discovered is over six hundred feet fronting the river, and from sixty to ninety feet high. It is made of hewn stones, three to six feet long. Ranges of steps rise upon the sides.

"Of the moral effect of the monuments themselves," says Mr. Stephens, "standing as they do in the depths of a tropical forest, silent and solemn, strange in design, excellent in sculpture, rich in ornament, different from the works of any other people—their uses and purposes, their whole history so entirely unknown, with hieroglyphics explaining all, but perfectly unintelligible, I shall not pretend to convey an idea. The tone which pervades the ruins is that of deep solemnity. An imaginative mind might be infected with superstitious feelings. From constantly calling them by that name in our intercourse with the Indians, we regarded these solemn memorials as idols—objects of adoration and ceremonial worship."

2. *Ruins of Quirigua.*—These are a pyramidal structure, similar

to the temple, but much smaller, and a colossal head six feet in diameter. Other monuments exist, even larger than those of Copan. Mr. Stephens, quoted by Mr. McGregor, for we have not his work before us, and have not read it for several years, says :

"Of one thing there is no doubt, a large city once stood there ; and except for a notice taken from Mr. C.'s notes, and inserted by the Senors Payes in a Guatemala paper after the visit, which found its way to this country and Europe, no account of its existence has ever before been published. For centuries it has lain as completely buried as if covered with the lava of Vesuvius. Every traveller from Yzabal to Guatemala has passed within three hours of it—we ourselves had done the same—and yet there it lay, like the rock-built city of Edom, unvisited, unsought, and utterly unknown."

3. Ruins of Palenque.—These, it is said, were first discovered by a party of Spaniards, as early as 1750 ; but the fact was not known in Europe until the publication of Dupaix's work.

"The Indians and people of Palenque say, that they cover a space of sixty miles. In a series of well written articles in our own country, they have been set down as ten times larger than New-York ; and lately I have seen an article in some of the newspapers referring to our expedition, which represents the city discovered by us as having been three times as large as London !

"The Indians and inhabitants of Palenque really know nothing of the ruins personally, and the other accounts do not rest upon any sufficient foundation. The whole country, for miles around, is covered with a dense forest of gigantic trees, with a growth of bush and underwood unknown in the wooded deserts of our own country, and impenetrable in any direction, except by cutting a way by a *machete*. What lies buried in the forest, it is impossible to say, of my own knowledge ; without a guide, we might have gone within a hundred feet of all the buildings without discovering one of them. Captain Del Rio, the first explorer with men and means at command, states in his report, that in the execution of his commission, he cut down and burnt all the woods. He does not say how far, but judging from the breaches and excavations made in the interior of the buildings, probably for miles around. Captain Dupaix, acting under a royal commission, and with all the resources such a commission would give, did not discover any more buildings than those mentioned by Del Rio, and we saw only the same ; but having the benefit of them as guides, at least of Del Rio, for at that time we had not seen Dupaix's work, we of course saw things which escaped their observation, just as those who come after us will see what escaped ours.

"The palace in which Mr. Stephens resided," he says, "stands on an artificial elevation of an oblong form, 40 feet high, 310 feet front and rear, and 260 feet on each side. The elevation was formerly faced with stone, which has been thrown down by the growth of trees, and its form is hardly distinguishable.

"The building stands with its face to the east, and measures 228 feet front by 180 deep. Its height is not more than 25 feet, and all around it had a broad projecting cornice of stone. The front contains 14 doorways, about nine feet wide each, and the intervening piers are between six and seven feet wide. On the left, in approaching the palace, eight of the piers have fallen down, as also has the corner on the right, and the terrace underneath is crumbled with the ruins. But six piers remain entire, and the rest of the front is open.

"Another portion was enclosed by a richly ornamented border, about ten feet wide and six high, of which only a part now remains. The principal personage stands in an upright position, and in profile, exhibiting an extraordinary facial angle of about forty-five degrees. The upper part of the head seemed to have been compressed and lengthened, perhaps by the same process employed upon the heads of the Choctaw and Flat-head Indians of our own country. The head represents a different species from any now existing in that region of country, and supposing the statues to be images of living personages, or the creations of artists according to their ideas of perfect figures, they indicate a race of people now lost and unknown. The head-dress is evidently a plume of feathers ; over the shoulders is a short covering, decorated with studs and a breast-plate ; part of the or

nament of the girdle is broken; the tunic is probably a leopard's skin, and the whole dress, no doubt, indicates the costume of this unknown people. He holds in his hand a staff or sceptre, and opposite his hands are the marks of three hieroglyphics; which have decayed or broken off. At his feet are two naked figures seated cross-legged, and apparently suppliants. The hieroglyphics doubtless tell its story. The stucco is of admirable consistency, and hard as stone. It was painted, and in different places about it we discovered the remains of red, blue, yellow, black, and white.

"The piers, which are still standing, contained other figures of the same general character, but which, unfortunately, are more mutilated, and from the declivity of the terrace, it was difficult to set up the camera lucida in such a position as to draw them.

"The piers which have fallen are no doubt enriched with the same ornaments. Each one has some specific meaning; and the whole, probably, presented some allegory or history; and when entire and painted, the effect in ascending the terrace must have been imposing and beautiful.

"The whole court-yard was overgrown with trees, and it was encumbered with ruins several feet high, so that the exact architectural arrangements could not be seen.

"About a mile and a half from the village, we came to a range of elevations extending to a great distance, and connected by a ditch, which had evidently formed the line of fortifications for the ruined city. They consisted of the remains of stone buildings, probably towers, the stones well cut and laid together, and the mass of rubbish around abounded in flint arrow-heads. Within this line was an elevation which grew more imposing as we approached—square, with terraces, and having in the centre a tower, in all 120 feet high. We ascended by steps to three ranges of terraces, and on the top entered an area, enclosed by stone walls and covered with hard cement, in many places still perfect. Thence we ascended by stone steps to the top of the tower, the whole of which was formerly covered with stucco, and stood as a fortress at the entrance of the great city of Utalan, the Capital of the Quichi Indians.

"This was the first appearance of strangers in Utalan, the capital of the great Indian kingdom, the ruins of which were now under our eyes, once the most populous and opulent city out of the whole kingdom of Guatemala."

In regard to the antiquity of the ruins everywhere so profusely scattered throughout Central America, speculations have multiplied, as is most natural. Different views have been held and abandoned. The subject is as yet involved in doubt and incertitude, though so far as the researches of Mr. Stephens extend, they seem to have satisfied his mind, that the vast cities, and towns, and monuments discovered, were the workmanship and habitations of the people conquered by the Spaniards, and not of any former and obliterated nation. We give his views upon this point:

"My opinion on this question has been fully and freely expressed, that they are not the works of people passed away and whose history is lost, but of the same race who inhabited the country at the time of the Spanish conquest, or of some not very distant progenitors. Some were probably in ruins; but, in general, I believe that they were occupied by the Indians at the time of the Spanish invasion. The grounds of this belief are interspersed throughout these pages; they are interwoven with so many facts and circumstances, that I do not recapitulate them; and, in conclusion, I shall only refer briefly to those arguments which I consider the strongest that are urged against this belief.

"The first is the entire absence of all traditions. But, I may ask, is this not accounted for by the unparalleled circumstances

which attended the conquest and subjugation of Spanish America? Every captain or discoverer, on first planting the royal standard on the shores of a new country, made proclamation according to a form drawn up by the most eminent divines and lawyers in Spain, the most extraordinary that ever appeared in the history of mankind, entreating and requiring the inhabitants to acknowledge and obey the Church as the superior and guide of the universe, the holy father called the Pope, and His Majesty as king and sovereign lord of these islands and of the *terra firma*; and concluding, but if you will not comply, or maliciously delay to obey my injunction, then, with the help of God, I will enter your country by force; I will carry on war against you with the utmost violence; I will subject you to the yoke of obedience to the Church and king; I will take your wives and your children and make them slaves, and sell or dispose of them according to His Majesty's pleasure; I will seize your goods, and do you all the mischief in my power, as rebellious subjects, who will not acknowledge or submit to their lawful sovereign; and I protest, that all the bloodshed and calamities which shall follow are to be imputed to you, and not to His Majesty, or to me, or the gentlemen who serve under me.

"The conquest and subjugation of the country were carried out in the unscrupulous spirit of this proclamation. The pages of the historian are dyed with blood; and, sailing on the crimson stream, as master pilots at the helm, appears the leading, stern, and steady policy of the Spaniards, surer and more fatal than the sword, to subvert all the institutions of the natives, and to break up and utterly destroy all the rites, customs, and associations, that might keep alive the memory of their fathers and their ancient condition.

"The graves cry out for the old historian, and the mouldering skeletons of cities confirm Herrera's account of Yucatan, that 'there were so many and such stately stone buildings, that it was amazing. And the greatest wonder was, that, having no use of any metals, they were able to raise such structures, which seem to have been temples, for their houses were all of timber, and thatched.' And again he says, 'for the space of twenty years there was such plenty throughout the country, and the people multiplied so much, that men said the whole province looked like one town.'"

Let us now from the unknown proceed to the known, and take a practical view of Central America as it is presented at the present day.

The valley countries are fertile, and there are mountain elevations of from 5 to 13,000 feet. The coasts on both oceans are unhealthy. The climate varies. According to MacGregor, it freezes on the highest table-lands in winter. At Guatemala the dry season extends from November until June. The other months are rainy and stormy. The thermometer ranges between 56° the lowest to 86° the highest. On the Pacific the temperature is hotter and healthier than on the Atlantic. The population has been estimated as 1,500,000; viz. 125,000 European races, 500,000 mixed, 875,000 Indians. There are mines of gold, silver, iron, lead, and

mercury. They are much neglected. Jasper and ~~malta~~ ^{malta} are worked. Brimstone and salt are collected. Forests of valuable woods abound. The trees are sometimes 35 feet in circumference, and 90 in height. There are very large lakes. The rivers are numerous, but short. Mr. Stephens has a most interesting description of the *Usumasinta*, the largest river of Central America.

On the banks of the River Dulce is a small town called *Yzabel*. *San Juan* is at the mouth of the river of the same name, and receives its produce, hides, indigo, &c. *Omoa* receives goods destined for *Guatemala*, and *St. Salvador*. *Comayagna*, *Tegucigalpa*, and *Truzillo*, are in the province of Honduras; the last named has 4,000 inhabitants.

New Guatemala, the capital of Central America, is on an undulating plain, 4,961 feet above the level of the sea. The houses are low and stout, from the danger of earthquakes, and contain a population of 40,000. The city is famed for its religious celebrations. "The processions, in honor of the Virgin and others, are frequent. All the streets, through which the processions pass, are strewn with pine leaves, and adorned with arches decorated with evergreens and flowers. From the long balconies and windows are displayed curtains of crimson silk, and flags with various devices. At the corners are erected altars within huge arbours of evergreens, and in these altars pictures and silver ornaments, borrowed from the churches, are conspicuous, and surmounted with flowers. The plain, or the valley of Guatemala, is pre-eminent for the variety and brilliancy of its floral kingdom. These flowers are in profusion devoted to the embellishment of the religious processions."

Old Guatemala is at an elevation of 5,817 feet. It was the capital, but destroyed by an earthquake in 1773. The old inhabitants and their descendants cling to the ruins, and are in number 15,000.

Mr. Stephens says:—

"On each side were the ruins of churches, convents and private residences, large and costly, some lying in masses, some with fronts still standing, richly ornamented with stucco, cracked and yawning, roofless, without doors and windows, and trees growing inside above the walls. Many of the houses have been repaired. The city is partly repeopled, and presents a strange appearance of ruin and recovery. The inhabitants, like the dwellers over the buried *Herculaneum*, seemed to entertain no fears of renewed disaster. The great volcanoes of *Agua* and *Fuego* look down upon it. In the centre of the plaza there is a large stone fountain, and it is surrounded by magnificent buildings. The former palace of the Captain-General, displaying the armorial bearings granted by the Emperor Charles V. to the 'loyal and noble city,' and surmounted by a statue of *St. James* on horseback, armed and brandishing a sword, and the roofless and dilapidated cathedral, a vast edifice 300 feet long, 120 broad, nearly 70 feet high, and lighted by 50 windows, are monuments which tell us that *La Antigua* was one of the most superb cities of America, and to which *Alvarado* gave the name of 'the city of *St. James of Gentlemen*.'"

Totonicapan contains a population of 12,000, and manufactures earthenware, utensils, woollen cloths, &c. *Quetzaltenango* contains 140,000, with some coarse manufactures. *Coban* has 14,000. *Salame*, 5,000. *Gualan*, 10,000. Mr. Stephens describes the last:—

"Towards evening we strolled through the town. It stands upon a table of breccia rock at the junction of two noble rivers, and is encircled by a belt of mountains. One principal street, the houses of one story, with piazzas in front, terminates in a plaza or principal square, at the head of which stands a large church with a gothic door, and before it, at a distance of ten or twelve yards, was a cross of about twenty feet high. The population is about 10,000, chiefly mestizoes. Leaving the plaza, we walked down to the motagua; on the bank a boat was in process of construction, about fifty feet long and ten wide, entirely of mahogany; near to it a party of men and women were fording the stream, carrying their clothes above their heads, and around a point three women were bathing. There are no ancient associations connected with this place, but the wildness of the scene, the clouds, the tints of the sky and the setting sun reflected upon the mountains, were beautiful. At dark we returned to the house. Except for the companionship of some thousands of ants, which blackened the candles and covered everything perishable, we had a room to ourselves. Early in the morning we were served with chocolate and a small roll of sweet bread. Toward evening the whole town was in commotion, preparatory to the great fête of Santa Lucia. Early next morning the firing of muskets, petards and rockets announced the arrival of this lady, one of the holiest saints of the calendar, and next to San Antonio, the most renowned for working miracles."

Realajo is a seaport on the Pacific, and exports mahogany, cedar, etc., to Peru and Chili. The harbor is most capacious. *Leon* is the capital of the State of Nicaragua; and, from a population of 30,000, has greatly declined. The population, in 1820, was 14,000.

"In walking through its streets," says Mr. Stephens, "I observed palaces in which nobles had lived, dismantled and roofless, and occupied by half starved wretches, pictures of misery and want, and on one side an immense field of ruins, covering half the city. I must confess that I felt a degree of uneasiness in walking the streets of Leon that I never felt in any city of the East. My change of dress did not make my presence more acceptable, and the eagle on my hat attracted particular attention. At every corner was a group of scoundrels who stared at me as if disposed to pick a quarrel. With some my official character made me an object of suspicion, for in their disgraceful fights they thought that the eyes of the whole world were upon them, and that England, France, and the United States were secretly contending for the possession of their interesting country."

Seba and *Valladolid* are unimportant. In the neighborhood of *Tegucigalpa* are mines of gold, silver, copper, and iron. *St. Salvador* has 16,000 inhabitants, who are industrious, and manufacture iron and cotton. In the vicinity of *St. Vincent* are plantations of indigo and tobacco. *St. Miguel* is noted for its fairs. *Sacatecoluca* contains 8,000 inhabitants. Fancy shell-work is manufactured at *Sonzonante*, on the banks of the Rio Grande, and exported. Sugar is also grown in the neighborhood, and exported. *Aguachapa* has 8,000 population. In the vicinity of *Santa Anna* are plantations of indigo and the best sugar; also, iron mines, which are worked. *Metapa*, *Managua* and *Masaya* are unimportant. *Granada*, on the banks of the Nicaragua Lake, has 14,000 inhabitants. Cacao is raised about the city of *Nicaragua*. *Segovia* and *Comitan* are small towns.

The roads through Central America are execrable.

The agricultural productions are various. Wheat, barley and fruits abound on the table-lands. Indian corn is the principal article of food. Rice is grown. Sugar-cane, indigo, cochineal, tobacco

and cotton are widely cultivated. Mr. Stephens describes a hacienda or estate engaged in producing cochineal.

"In the yard were four oxen grinding sugar cane, and behind was the *nopel*, or cochineal plantation, one of the largest in the Antigua. The plant is a species of cactus, set out in rows like Indian corn; and at the time I speak of, it was about four feet high. On every leaf was pinned with a thorn a piece of cane, in the hollow of which were thirty or forty insects. These insects cannot move, but breed, and the young crawl out and fasten upon the leaf; when they have once fixed, they never move: a light film gathers over them, and as they feed, the leaves become mildewed and white. At the end of the dry season some of the leaves are cut off and hung up in a store house for seed, the insects are brushed off from the rest and dried, and are then sent abroad to minister to the luxuries and elegancies of civilized life, and enliven with their bright colors the saloons of London, Paris, and St. Louis in Missouri. The crop is valuable but uncertain, as an early frost may destroy it; and sometimes all the workmen of the hacienda are taken away for soldiers at the moment when they are most needed for its culture. The situation was ravishingly beautiful, at the base and under the shade of the Volcans de Agua, and the view was bounded on all sides by mountains of perpetual green; the morning air was soft and balmy, but pure and refreshing. With good government and laws, with one's friends around, I never saw a more beautiful spot on which man could desire to pass his allotted time on earth."

Immense herds of cattle are reared in the pasture lands. Manufactures are, of course, in a primitive state. A cotton factory is described near Realejo, built by an American, and owned by another, from which something was anticipated.

"Of the trade and navigation of this country," says Mr. MacGregor, "no statistical account can be obtained. Small vessels from the West Indies and the United States, and occasionally from Europe, frequent the coast, and carry on a trade chiefly contraband, in consequence of the pernicious system of high duties, which the government of the day, in some mischievous form or other, has attempted to establish. Vessels from the western coast of America also land various articles. Costa Rica has separated from the other states. Salvador may also be said to act independently. Guatemala is still under the sway of the Indian Carrera. Nicaragua has its separate misrule, and Honduras has published its distinct administration and customs laws. The tonnage duties for anchorage are four reals, or about two shillings per ton for native vessels, and double that amount for foreign vessels. These were the rates established in 1837 for all the other states. Export duties, as well as import, are also attempted to be levied, but at such irregular and changeable rates, that we have not been able to procure correct data to enable us to give tabular statements, or tariff, for any of the states of Central America.*

We have already, in previous numbers of the Review, furnished full and interesting information relating to the Isthmus country of Panama and Nicaragua, which renders any further comment unnecessary. We have also a paper upon Tehuantepec in Vol. III. COM. REVIEW.

Art. II.—UNITED STATES PUBLIC LANDS.

ORGANIZATION AND HISTORY OF THE LAND OFFICE—VALUE OF LANDS SOLD—LANDS GRANTED TO STATES AND TERRITORIES—RELIEF TO PURCHASERS—COST OF THE PUBLIC LANDS—AREA OF THE LAND, STATES, AND LANDS REMAINING—PRE-EMPTION RIGHTS—WAR BOUNTIES—MINERAL LANDS, ETC.

THE General Land Office, as a bureau of the Treasury Department, is more extensive and complex in its details than any other at Washington. A late report from the Commissioner, published by order of Congress, has just been received. On examination, highly interesting facts appear, and we propose to aid in spreading them more generally before the people. A glance at the machinery of the system may be proper, if only to impress the reader with a fair conception of the wisdom and labor which contrived and sustains it.

Whether Mr. Crawford, Secretary of the Treasury from 1817 to 1825, or some other distinguished adviser of Congress, first recommended the public lands to be laid off on the present plan, we have no evidence at hand to justify an award of credit. It is enough that a masterly, practical mind furnished the idea.

Before proceeding further, we beg to show the confusion which must have existed in land titles under the old method of surveying, to suit government scrip holders or bounty claimants. The case of Virginia is illustrative. This state had immense limits, which enabled her to make liberal provision for her troops in the Revolutionary War. Of these, she had two separate and distinct classes,—one in the continental line, subject to the orders of Congress, and the other under the exclusive control of her own state authority. To both she promised lands. Congress engaged likewise to those who served during the war. Hence, that portion of the Virginia troops on the continental establishment became entitled to double bounties. By deed of 1784, ceding the north-west territory, Virginia reserved a district in Ohio, containing upwards of 4,000,000 acres, to satisfy the claims for which she was liable. These lands were surveyed at random, so as to include the best for each holder. Frequently the lines crossed, and returns were made in favor of two or more conflicting parties for the same lots. This created litigation, which has continued for half a century to jeopard the property of thousands, and inflict enormous costs. The investigation of each case involved the acts of Virginia, the regularity of the original claim and survey, and of all subsequent titles resting on this foundation. Besides such proof, difficult to make after a long interval, the identity of boundaries had to appear in court. This could not always be established by the plat and field-notes. Oral testimony had to be invoked to show the beginning and marks of each survey. Who does not see the endless confusion and hazard of this *state of things*? It was a fortunate suggestion, which led to the

simplicity afterwards engrafted by Congress on the land system, the beneficial results of which are so widely felt and acknowledged. We will briefly state the merits.

Say that a district is owned by the government, to be surveyed and sold. It is divided by a meridian line, running north and south, with base lines east and west. On each of the latter, ranges, six miles wide, parallel with the meridian, are thrown, and checked at the same distance, forming townships of thirty-six sections of 360 acres, or a square mile, numbered from the north-east corner backward and forward. These are subdivided into halves, quarters, eighths, and sixteenths, subject to private entry, after having been offered at public sale, without commanding \$1 25 per acre, the minimum price. Purchasers obtain government titles designating the entire section, the half, quarter, half quarter, or half of the half quarter, ranging from 640, 320, 160, 80 to 40 acres, as the case may be. This is the form in which divisions are expressed, varying to suit the compass for the lot selected. At the entering, certificates are issued by the receiver for the proper quantities, and duplicates registered in the office. Maps, on a scale of one mile to the inch, are usually kept, on which, as sales take place, a mark signifies the fact. The vacant lands are thus represented. Persons wishing the information can obtain it from the maps; or, if they prefer, a plat of any township, duly scored, will be prepared instantly and sold for a small fee, say fifty cents or a dollar to the clerk in charge.

The land office papers are truly voluminous. Some idea may be formed from the report of the Commissioner in 1840, when the number of certificates had reached 810,667. Offices in three states had returned over 100,000; viz. Indiana, 152,655; Illinois, 132,890; and Alabama, 114,802. On each of these, a patent had to be issued at Washington, with the signature of the President. There was great justice in the relief afforded by Congress to Gen. Jackson and his successors, by deputing another to sign patents. The returns from receivers, annually, are about 400 to be adjusted. In addition to the space occupied on the books by every certificate and map of sale, and the business entries, each patent is recorded at large. All these duties form only a part of the work.

The correspondence of the land office, of whatever description, is copied on the books. Instructions to registers, receivers, deputy surveyors, and all the agents employed, are likewise preserved in duplicate. In ten thousand controversies between claimants, the Commissioner has to decide, and often on the advice of the Attorney General, to whom the facts are submitted in writing. The arguments for and against each pretension are spread out freely. Whoever will examine the many volumes printed on this subject, will see the propriety and extent of the practice. They serve as guides in similar cases, and furnish the law of each appeal. In this branch of its functions, the land office is something more than a routine of mechanical labor. A degree of intelligence is required equal to that of any Bureau at Washington second to the heads of department. In proof, we refer to the 2,537 entries which have been confirmed by

the Secretary of the Treasury, Attorney General and Commissioner, under the act of 1846, respecting controverted claims. The aggregate thus adjusted was 332,870 acres, of which the largest proportion is in Louisiana; say 525 pre-emption entries, embracing 80,080 acres. The next from Missouri, 492 entries, and 61,450 acres. In Mississippi, 242 pre-emption entries embraced 20,600 acres, and 473 private entries about 44,560 acres. In the nine other states litigating, the quantity was much less.

Having viewed the machinery of the land office in defining the public domain, granting title, and preserving the evidence, we proceed to facts more statistical.

RECEIPTS AT THE TREASURY—VALUE OF PUBLIC LANDS SOLD FROM
1833 TO 1840.

States and Territories.	1833.	1834.	1835.	1836.	1837.	1838.	1839.	1840.	Total.
Ohio.....	692,426	600,561	826,224	1,663,116	568,564	843,945	315,559	27,141	6,017,544
Indiana.....	693,522	840,170	2,075,571	4,061,492	1,564,653	753,419	773,998	114,151	10,878,986
Illinois.....	450,242	439,613	2,604,699	4,000,394	1,366,118	897,170	1,445,766	387,304	11,569,369
Missouri.....	396,521	336,978	328,131	2,071,204	530,695	642,087	1,304,718	567,182	6,880,880
Alabama.....	565,818	1,494,399	1,945,449	2,377,572	477,219	204,835	192,728	45,442	7,251,460
Mississippi.....	1,531,290	1,470,323	3,835,625	2,531,262	320,660	339,050	32,234	18,395	10,068,573
Louisiana.....	111,809	104,813	407,445	1,069,323	288,692	218,330	822,080	189,875	3,240,369
Michigan.....	563,961	643,926	2,271,575	5,241,328	969,071	121,929	175,008	24,340	10,010,245
Arkansas.....	52,324	213,020	787,927	1,204,544	353,063	197,587	188,710	113,199	3,110,377
Wisconsin.....	.....	.....	316,709	508,932	223,478	109,416	819,909	127,197	2,465,644
Iowa.....	.....	.....	.....	.....	.....	343,864	373,180	596,789	1,307,643
Florida.....	14,963	46,384	60,455	108,889	125,907	66,618	70,660	29,191	516,498
Total.....	4,972,254	6,069,981	19,999,804	35,167,836	7,007,523	4,305,564	6,464,556	2,252,302	72,569,749

This table is derived from the report of Mr. Whitcomb in 1840, and introduced to show the rise in three years from \$5,000,000 to \$25,000,000 in sales under the paper system, and the sudden decline of \$18,000,000 after the specie circular of President Jackson in 1836. It is given as a record of the times. Previous to 1833, the sales were comparatively small. From a Senate report in 1832, we learn that the sales for 1828 amounted to \$1,108,308; in 1829, \$1,517,175; in 1830, \$2,329,356, and in 1831, \$3,000,000. That the sales never exceeded the latter sum in any one year, is proved by the annual report of the Secretary of the Treasury in 1831, in which he says:—"The receipts from the public lands during the present year, it will be perceived, have likewise exceeded the estimates, and, indeed, have gone beyond any former example." How rapidly this column ascended within the next five years, and then gradually sank below its ancient level!—A striking illustration of the agency of banks in expanding and contracting the business of the country.

GRANTS TO THE STATES.—Without expressing an opinion on the power of the government to apply the public lands to other than national objects, we annex a statement from official sources:

WHOLE QUANTITY OF LANDS GRANTED TO THE STATES AND TERRITORIES.

States and Territories.	Colleges and Acad.	Internal Improvements.	Seats of Gov't.	Salines.	16th Sections.	Total.	Amount at \$1.25 per acre.
Ohio.....	69,120	1,050,187	....	25,680	678,976	1,823,963	\$2,275,325
Indiana.....	46,000	783,309	2,560	32,040	558,184	1,411,073	1,763,541
Illinois.....	46,000	689,085	2,560	121,639	977,477	1,536,751	2,595,538
Missouri.....	46,000	500,000	2,449	46,080	1,056,639	1,651,448	2,161,560
Alabama.....	46,500	500,000	1,620	33,040	722,160	1,293,410	1,616,742
Mississippi.....	46,000	500,000	1,280	....	635,884	1,153,244	1,479,055
Louisiana.....	46,000	500,000	....	....	873,973	1,430,653	1,775,066
Michigan.....	46,000	500,000	13,200	46,080	843,590	1,149,553	1,436,566
Arkansas.....	46,000	500,000	10,600	46,080	590,155	1,553,015	1,941,272
Florida.....	46,000	500,000	1,130	....	877,484	1,429,684	1,786,555
Wisconsin.....	46,000	171,300	....	....	*1,310,434	4,547,704	1,809,630
Iowa.....	46,000	500,000	640	....	489,532	1,016,522	1,270,590
Total.....	576,480	6,693,781	36,009	379,629	9,682,814	17,319,623	21,645,279

* The 16th sections for Wisconsin and Iowa estimated according to the area of those States.

RELIEF TO PURCHASERS.—While tracing the action of Congress on behalf of the states, we notice, that for the relief of individuals who had become indebted to the government for lands previous to 1820, the minimum price was \$2, and large sales had been made over that sum, even to \$50 and \$70 per acre, on credit, after a trifling cash instalment. In this year, however, the price was reduced to \$1 25, at which it has since remained. Debtors saw their condition, and asked relief, which was granted by sundry acts of Congress to 1832. They were permitted to relinquish the lands purchased, and receive back their bonds, upon forfeiting what they had already paid to the government.

TABLE SHOWING THE QUANTITY RELINQUISHED, AMOUNT OF PURCHASE MONEY, AMOUNT ABATED BY GOVERNMENT, AND AMOUNT FORFEITED BY PURCHASERS.

	Acres relinquished.	Original purchase money.	Abated by Gov't.	Forfeited by Purchasers.
Ohio.....	432,954	\$1,038,932	\$1,155,128	\$668 28
Indiana.....	704,315	1,427,465	823,108	2,480 21
Illinois.....	697,334	1,401,512	803,288	3,288 83
Missouri.....	709,346	2,004,698	1,256,206	818 43
Alabama.....	1,842,535	8,649,400	8,020,297	7,141 64
Mississippi.....	188,990	377,980	298,081	1,456 25
Louisiana.....	1,898	3,797	18,407	—
Michigan.....	25,196	79,844	59,569	—
Total.....	4,602,573	14,983,631	12,234,086	15,853 66

From this showing, the government was very little profited by the forfeitures. The lands relinquished, (4,506,418 acres,) at \$1 25, would yield \$5,633,022, which would be so much refunded. Whatever the loss, it was better that the government should bear it than individuals, who would have been deceived by the transaction. The cash system having been adopted since 1820, there has been no other occasion for appeals to Congress to rescind contracts for land.

COST OF THE PUBLIC LANDS.—The Register of the Treasury, in answer to a resolution of Congress, reported the following in 1832:—

Payment on account of the purchase of Louisiana:—

Principal..... \$14,984,872 28

Interest on \$11,250,000..... 8,529,353 43

\$23,514,225 71

Payment on account of the purchase of Florida:—

Principal.....	\$4,985,599 82
Interest to 30th September, 1831.	1,265,416 67—\$6,251,016 49
Payment of compact with Georgia.....	1,065,484 06
Payment of Yazoo claimants.....	1,830,808 04
Payment of contracts with the several Indian tribes, (all expenses on account of Indians.).....	11,852,182 56
Payment of commissioners, clerks, and other officers, employed by the United States for the man- agement and sale of the western domain.....	3,563,834 51
	<u>\$48,077,551 40</u>

Amount of money received at the Treasury as the proceeds of public lands, to 30th September, 1831..... \$37,272,713 30

Since 1832, several treaties have been made with the Indians, for the extinguishment of their title, the cost of which we have not the means of ascertaining. But, within the last sixteen years, the expenditures of the government have been about \$30,000,000, on account of the public lands; and their whole cost, up to 1848, as stated in Congress by Gov. Brown, of Mississippi, was \$77,130,498. We have seen nothing official on the subject later than 1832, as quoted. The whole amount received for sales to 1848, is \$130,280,156, leaving a clear gain to the government of \$53,149,428, according to Gov. B., who, no doubt, had proper data. The lands unsold, to which the Indian title has been extinguished, amount to 242,342,802 acres. By a table from the commissioner, showing the area of the states holding public lands, it will be seen that the government has about 800,000,000 acres unsurveyed in the north-west territory.

SALES OF LANDS IN 1846 AND 1847.—Merely to post up, we annex a table showing the receipts at the Treasury for lands sold in 1846, and in the three first quarters of 1847, together with the amount of incidental expenses in each state, where offices are open, for the same period.

UNITED STATES LAND, OFFICE SALES, ETC.

	1846.	3 qrs. 1847.	Expenses.
Ohio,.....	\$150,827	\$107,081	\$12,042
Indiana,.....	127,596	193,182	23,052
Illinois,.....	548,650	410,226	53,391
Missouri,.....	181,142	240,213	20,859
Alabama,.....	104,106	127,042	21,743
Mississippi,.....	47,907	26,994	16,882
Louisiana,.....	61,221	69,932	19,178
Michigan,.....	38,593	47,202	10,640
Arkansas,.....	17,748	92,560	20,040
Florida,.....	44,317	24,735	10,170
Iowa,.....	284,897	298,311	27,562
Wisconsin Territory,.....	798,861	600,224	41,929
Total,.....	<u>\$2,405,871</u>	<u>2,337,684</u>	<u>287,565</u>

As to the incidental expenses stated in the report, we are at a loss to conjecture the items which constitute them. We presume that registers, receivers, and agents, to whom a fixed compensation is allowed, are not embraced; but that surveys, and other objects which necessarily involve an expenditure, form the basis. The footing-up shows a fraction over five per cent. on \$2,904,637, the gross amount of purchase money in 1846. Of this sum, \$2,713,648 was paid in cash; \$20,816 in treasury notes; \$300 in forfeited land stock; \$19,460 in military scrip, and \$150,412 in Choctaw certificates—in all, \$290,988, which, with expenses deducted, left the balance paid into the treasury.

For three quarters of 1847, as stated, the receipts were nearly equal to the whole of 1846. If the last quarter was in proportion, the receipts for 1847 fall very little short of \$3,000,000—an average requiring forty-three years to make the sum total received by the government. By reference to a preceding table of sales, from 1833 to 1839 inclusive, it will appear that in those seven years the sum of \$70,017,547 accrued to the treasury from the public lands—more than half the whole amount since the origin of the government.

AREA OF THE LAND STATES.—In the table furnished by the Commissioner, is an estimate of the area of the states and territories containing public lands, the quantity surveyed, that in process of survey, and the number of acres not yet surveyed or put under contract.

PUBLIC LANDS REMAINING IN THE STATES.

	Entire Area.	Surveyed.	In process of Survey.	Unsurveyed.
Ohio.....Acres,	25,361,593	25,361,593	—	—
Indiana.....	23,411,431	23,411,431	—	—
Michigan.....	38,426,294	27,697,906	300,000	10,428,388
Iowa.....	16,913,972	12,803,351	1,730,000	2,380,621
Wisconsin.....	47,175,292	12,455,825	1,500,000	33,219,467
Illinois.....	35,235,209	35,235,209	—	—
Missouri.....	43,169,028	39,838,171	650,000	2,680,857
Arkansas.....	33,086,548	31,565,908	1,200,000	320,640
Mississippi.....	30,153,054	30,153,054	—	—
Louisiana.....	28,297,602	19,906,897	325,000	8,065,705
Alabama.....	32,499,872	32,465,746	—	34,126
Florida.....	34,423,035	13,106,045	1,650,000	19,667,010
N. W. Territory east of the Rocky Mountains and west of Miss. river, exclusive of ceded lands in Iowa.....	478,549,708	—	—	478,549,708
N. W. Territory, west of the Rocky Mountains, Emigrant Indian lands West of Mississippi and Arkansas.....	218,536,320	—	—	218,536,320
	132,295,680	—	—	132,295,680

Connected with this subject, it may be curious to pursue the calculation. Estimate the vacant lands to which the title of the government is complete, at 240,000,000, and the domain north-west more or less encumbered by the Indian tribes, at 800,000,000, and the aggregate is 1,040,000,000 acres, which, at fifty cents per acre, would

yield five hundred and twenty millions of dollars to the Treasury! Add New Mexico, say 500 miles in length and 200 in width, the area will be 100,000 square miles, or 64,000,000 acres; and California, 600 miles long and 300 wide, will amount to 180,000 square miles, or 115,000,000 acres;—both together about 180,000,000. Suppose the whole population of the United States, 20,000,000, were destitute of land, the government could supply each man, woman and child, white and black, with sixty acres of the public domain. Reduced into families of five persons, the share would be 300 acres to each head of a family,—enough, with diligent cultivation, to produce ample support. This, however, is a mere speculative view, without any disposition to favor a grant on such a scale; yet we believe that the more liberally government acts in behalf of settlers, the happiness of the people and the prosperity of the Republic will be increased. It may be urged against too free a use of the public lands, that they should be retained for emergencies, ~~and~~ that the government may establish a sufficient credit on this security, should occasion require a loan, especially if revenue from imports be cut off by war with European powers. This necessity can never arise. In case of war the people will cheerfully submit to taxation in any form to sustain our flag; and such are the admitted resources of the country, and willingness to contribute, that government bonds will be at par value in all parts of the world.

Besides, the sooner government can dispose of its lands, the better for all parties. So long as they remain a subject of political discussion, the public mind will be influenced by appeals alike unworthy a high standard of statesmanship, or of an intelligent constituency. It is right that every man who desires, should have a domicile;—and we go farther in public policy,—that domicile, with acres enough for industry to live upon, should be inalienable. The best hold government can have upon the affections of the citizen, is reciprocity of interest; the one rewarding with kindness the sacrifices which the public service may at any time demand, and the other performing with alacrity, because, if disabled or slain, provision will be made for his relief, or those dear to him. In this spirit of mutual obligation, the Republic has its safest guaranty.

PRE-EMPTION RIGHTS.—The Commissioner advises a course toward actual settlers in which we fully concur,—the law to be so modified as to embrace every family who may in good faith seek a home on the public lands, whether surveyed or not, provided the Indian title has been extinguished. We cannot find better expression than the reasoning of the Report, p. 29:

"A policy thus liberal towards a very large class of our fellow-citizens cannot fail to produce the most beneficial results. It will facilitate the settlement and improvement of the frontier portions of the country, raise up a hardy race of backwoodsmen for its protection against the encroachments of our Mexican and Indian neighbors, afford them the means of improving their condition in many respects, and, above all, to educate their children, and will impress those patriotic frontiersmen with deeper feelings of regard for their government, when they find that they are no longer in danger of losing their hard-earned improvements, by being brought into competition with a more wealthy class of citizens at the land sales."

GRADUATION OF PRICE.—The views of the Commissioner on this head are sound and expedient, viz : that the refuse lands, for many years culled over, should be reduced in price so as to find sale, thereby aiding the treasury, and relieving it proportionably from interest on loans; and also to enable the states within which the lands lie, to impose the necessary tax to which other lands are subject, after five years, from sale.

WAR BOUNTIES.—Any objection to grants of land to the soldiers who fought our battles, should rest for validity on some ground other than loss of revenue. With a national domain exceeding ten hundred millions of acres, the quantity, even a section to each man, would be a trifle. Say that 40,000 soldiers were in Mexico at different stages of the war, all entitled to 160 acres, the aggregate would be only 6,400,000 acres,—scarcely to be felt in the administration of this interest. If allowed half a section, (320 acres,) the result would be twice, and if a section, (640 acres,) four times the quantity,—total, 25,600,000 acres. This may appear extravagant, and, compared with former legislation, is somewhat startling. If soldiers would settle upon their bounty lands, and thereby reap the full benefit, we should defend the liberality we have suggested; but as nine-tenths barter off their scrip for a trifle, from 25 to 40 cents per acre, merely serving as prey to speculators without any solid advantage to themselves, we cannot justly advocate such an appropriation by Congress. A direct pecuniary grant, which shall produce to the holder par value in any market, is preferable, and government stock would be laudably issued for this object.

The bounty lands granted by Congress to soldiers of the Revolution, and the war of 1812, in lieu of money, amounted in the aggregate to 9,750,000 acres.

MINERAL LANDS.—The report includes much information from Lake Superior, and from Wisconsin and Iowa, respecting ores on the public lands. Dr. Jackson, a learned geologist, has explored the Lake region with a sufficient corps, and in summing up his discoveries, says :

"We certainly have the most wonderful veins of native metals there that have ever been seen in the world. * * * * *

"With regard to the government, it will certainly be considered a liberal and enlightened policy to explore each new region, and to lay before the public a true account of what may be expected in the rocks and soil. The settlement of the country by emigration from more populous districts, and from Europe, will be the necessary result, and an active business will be created along the line of our great lakes, communicating with our mineral lands. Mining will cause a settlement of that district by our active population of miners, mechanics and farmers, when, if only agricultural lands were sought for, no one would think of going to the shores of Lake Superior, while so many fertile lands offer their attractions elsewhere."

Dr. Owen, U. S. Geologist for Wisconsin and Iowa, furnished an interesting narrative of his labors, from which we should be glad to extract passages, if the limits of this article were not already too extended.

ART. III.—THE AMERICAN INDIANS.*

THE government observes a policy which secures the highest good to the Indians,—holding stocks, and applying the interest as stipulated by treaty. In many instances the purpose is declared, say for orphans, education, afflicted persons, &c. We have prepared a table, showing the amount of stocks and annual interest for the several tribes sustaining this relation.

STOCKS IN TRUST FOR THE INDIANS.

	Date of Treaty.	Principal	Am. int.
Osages,.....	—, 1825.....	\$32,079	1,850
Kansas,.....	June, 1825.....	27,144	1,491
Choctaw orphans,.....	Sept., 1830.....	49,496	2,738
Choctaws (education),.....	Sept., 1830.....	62,439	3,730
Senecas,.....	Feb., 1831.....	5,000	250
Senecas and Shawnees,.....	Feb., 1831.....	13,000	685
Shawnees,.....	Aug., 1831.....	32,076	1,914
Creek orphans,.....	June, 1832.....	168,213	8,535
Chippewas and Ottawas.....	Sept., 1833.....	199,229	11,689
Pottawatomies (education),.....	Sept., 1833.....	82,056	4,058
Chickasaws, disabled,.....	May, 1834.....	2,000	100
Chickasaw orphans,.....	May, 1834.....	7,833	398
Cherokees,.....	Dec., 1835.....	759,899	38,692
Chippewas and Ottawas,.....	Mar., 1836.....	118,176	6,104
Menomonicas,.....	Sept., 1836.....	115,114	6,016
Choctaws,.....	Jan., 1837.....	500,000	25,000
Delawares (education),.....	—, 1838.....	7,806	468
Stockbridge and Munsees,.....	May, 1840.....	5,204	312
Total,.....		2,181,821	114,118

In addition, the government pays interest of five per cent. annually, on the following sums, in lieu of investing the same in stocks :

ANNUITIES TO THE INDIANS.

	Date of Treaty.	Principal.	Interest.
Delawares,.....	Sept., 1829.....	\$46,080	\$2,304
Choctaws,.....	Sept., 1830.....	87,200	43,600
Chippewas and Ottawas,.....	May, 1836.....	200,000	12,000
Sioux of Mississippi,.....	Sept., 1837.....	300,000	15,000
Sacs and Foxes of Missouri,.....	Octr., 1837.....	175,400	8,770
Sacs and Foxes of Mississippi,.....	Octr., 1837.....	1,000,000	50,000
Winnebagoes,.....	Nov., 1837.....	1,185,000	59,250
Iowas,.....	Jan., 1838.....	157,500	7,875
Osages,.....	Jan., 1838.....	69,120	3,456
Creeks,.....	Nov., 1838.....	350,000	17,500
Senecas of New-York,.....	May, 1842.....	75,000	3,750
Kansas,.....	Jan., 1846.....	200,000	10,000
Pottawatomies,.....	June, 1846.....	643,000	32,150
Total,.....		5,273,100	265,655

* By Acts of Congress 1842 and 1845.

We have seen no estimate of the number of each tribe in the ter-

* Concluded from p. 274. Vol. V.

ritory west of the Mississippi, but the entire Indian population, east of the Rocky Mountains, is supposed to be about 300,000. As the census is never taken, conjecture is resorted to, aided by such verbal reports as can be drawn from the chiefs and head men.

The Commissioner has submitted the agency reports, from which we extract. In regard to the Indians in Michigan, the sub-agent at Sault St. Marie, says :

"They have raised abundant crops of potatoes; it is said they will have a large quantity for sale. With their oxen, of which they (at the Ance Kewewena) have two yokes, they have done much towards clearing spots of gardens. Their stock of cows and hogs have increased considerably. The means of supply and comforts which these Indians possess, and are seeking to augment, have been promoted by the exertions of the missionaries and the government operatives who are with them, and who have been active in preventing the introduction of whiskey at the Ance."

Referring to another town, the report continues :

"They appear anxious to put up houses for themselves, and the logs and barks for several have been got out; they have been, however, unable to get plank and nails to complete them.

"This Sault band have sold not less than 400 barrels of fish: last spring they made about 8,000 pounds of maple sugar. The turnips, pumpkins, and corn gathered this fall, have been as abundant as at any previous season."

The Chippewas in Wisconsin are thus represented :

"They plant to thrice the extent, and are yearly increasing the amount; and men who, four years ago, would have considered it a lasting disgrace to perform any kind of agricultural labor, now lay hold manfully and consider it highly honorable. They are fast abandoning the principle of a community of property, and each man begins to feel that his business is to provide for his own family, and to make provision in time. They have abandoned, to a considerable extent, the ceremonies and practice of their heathen worship and heathen creed; and, although they may practice it, acknowledge the truth and superiority of the white man's religion. Many of them have adopted, in whole or in part, the dress of civilized men, and live, so far as their circumstances will admit, in a civilized manner."

The Agent at Fort Leavenworth reports :

"The Kansas, Shawnees, Delawares, Kickapoos, Stockbridge, Munsee and Christian Indians, are the tribes that are placed under my care, all of whom, except the Kansas, are doing well, and becoming more and more civilized, and better agriculturists every year. This year they have raised an abundance of corn to do them—many of them will have to spare; some have already sold considerable lots of corn; many of them raise oats and some wheat, and all raise vegetables of various kinds,—pumpkins, cabbages, potatoes, &c., &c.

"These tribes send many of their children to school. There are two manual labor and one common school among the Shawnees, one common school among the Delawares, and one among the Christian Indians, and, until lately, one among the Stockbridges. At the Methodist manual la-

bor school among the Shawnees, this year there are 125 scholars: 78 males and 47 females; of this number, the Delawares furnish 19 males and 19 females; the Shawnees furnish 21 males and 9 females; the balance of the number is made up from various other tribes. At this institution they are endeavoring to give males and females, at least a common English education. The males are taught the various branches of agriculture; some of them are placed under mechanics, to learn trades,—such as wagon-makers, blacksmiths, and shoemakers. The females are taught all the duties of housewifery, cooking and spinning, weaving, knitting, &c."

From the Upper Missouri Agency, we have the following :

" The Indians are in good health and doing unusually well. Their resources amounted to \$300,000 for the last season, which may be estimated as follows:

75,000 buffalo robes, at \$3.00 per robe,.....	\$225,000
Furs, peltries, &c.....	35,000
Miscellaneous trade,.....	40,000

The aggregate of which is as above stated,.....\$300,000

And would be amply sufficient to supply all the wants of the Indians, but for the extravagant prices of goods, which are unreasonably high, and should be curtailed."

The report states—

" There are nine tribes in the agency, and they may be estimated as follows :

The Sioux	number 2,520	lodges, containing	19,660 souls
The Arikarees	" 240	" "	1,800 "
The Gros Ventres	" 150	" "	1,350 "
The Mandans	" 40	" "	360 "
The Poncas	" 200	" "	1,600 "
The Chayennes	" 317	" "	2,536 "
The Crows	" 530	" "	5,300 "
The Blackfeet	" 810	" "	6,480 "
The Asseniboines	" 980	" "	6,860 "

The aggregate number of which is..... 45,946 "

Total number of lodges, 5,587, which would be a fraction of over eight souls to the lodge.

" The Sioux, Chayennes, Gros Ventres, Mandans, and Poncas are excellent Indians, devotedly attached to the white man, and live in peace and friendship with our government; and they are entitled to the special favor and good opinion of the Department for their uniform good conduct and pacific relations."

The officer in charge of the Wyandott Agency, remarks :

" Few, if any of the North American tribes have advanced as far towards the much desired goal than have the Wyandotts; they can boast many men of acquirements and letters. The arts and sciences find their votaries among this people. The spirit of improvement is abroad and amongst them. Many have, during the past season, erected comfortable houses, extended their fields, and purchased oxen and horses to carry on their farming operations. The fertility of the soil of the tract of country on which the Wyandotts are settled, and the skill with which many of them cultivate it, were referred to in my last annual report. The circumstan-

ces then warranted me in so favorably noticing, but the evidences which have transpired during the past season make what was then said still more palpable; for I venture the assertion, that better crops of corn cannot be found in any other section of the country. Some of them have also made experiments the past season in wheat-growing, and their efforts, it is gratifying to inform you, have resulted in the most complete success. Every other species of agricultural products equally cultivated in the same climates, are produced in abundance and in the greatest perfection on the lands of the Wyandotts.

"A commendable zeal for the education of the youth is felt by many of these people. Notwithstanding the fund of five hundred dollars, annually appropriated by the government for that purpose, is ample, several families have sent their daughters and sons to select schools abroad, some four of whom have recently returned with education and accomplishments derived from their more highly favored white neighbors. Amongst these are the daughters of W. W.; one of whom has since accompanied me to St. Louis and purchased a piano, and I understand is quite proficient in the use of it. Strange sounds these in an Indian country! Yet the philanthropist, it is hoped, may safely look forward to no very distant day when not only the Wyandott, but many other aboriginal tribes of our country, shall have fully emerged from the savage state into the full blaze of civilization."

Of another tribe, the agent says:

"Accounts from the other Choctaws, the 'old settlers,' represent that their crops have been unusually abundant this year, the season having been remarkably favorable. It is said that there will be a large surplus of corn, and that over one thousand bales of cotton will be shipped from the settlements bordering on the Red River. I am not able to give you the exact number of the tribe, the census returns being still incomplete; but it is the opinion of its more intelligent members, that notwithstanding the last year has been unusually sickly, the population is increasing. The settlements are extending westward rapidly, already reaching 200 miles west of the Arkansas line. Whether at present they are materially improving as a people, I am not able to judge, not having been long enough among them; though from the statements of the very respectable and intelligent gentlemen who have resided among them the last twenty years as missionaries, it would seem that they are."

From the Cherokee Nation, the agent reports:

"The season has been very favorable to the production of grain, and all other vegetables raised for domestic use; and the general health of the country, this season, has thus far been very good. Upon the whole, the affairs of the nation may be considered in a much better situation than they were last year. Owing to the party and political differences which have for upwards of seven years agitated the nation, much diversity of opinion has heretofore existed between the different parties in regard to the propriety and necessity of dividing into separate and distinct governments, either by a partition of the country they now occupy, or by the government of the United States providing a new home in a distant country for a portion of them, by which they would be finally separated. The provisions of the late treaty, however, have dissipated that policy, and it now seems the settled opinion, that the country they now inhabit is to be considered their permanent home as a nation. The settlement of this question has imparted energy to the undertaking of national improvement, and given permanency to their designs. In addition to the eight

public schools in the nation and the missionary establishments, the authorities of the nation have resolved on building two seminaries, near Tah-le-quah, or the council ground; one for the education of males, and the other for females. This laudable undertaking has been embarked in with commendable energy; and since the commencement of the manual labor, has given daily employment to about seventy-five hands, including mechanics and ordinary laborers. The buildings are of brick, and will be large and commodious. The probable cost is estimated at about \$35,000.

The Chickasaws are thus referred to by the agent :

"I feel satisfied now that in the course of a few years all the Chickasaws will be once more together; and they ought to be so, for they have a beautiful country, well adapted to all their wants, with a fine climate, and they will be much better contented; there will not then be that jealousy existing among them that did exist a few years since, and the unkind feelings which exist between them and some of the Choctaws, I think, will be entirely removed. They will be more convenient to the place of paying their annuities, and their schools, (should they have any.) They have fine crops this year of corn, cotton, oats, potatoes, &c. Their supply of corn this year will be very great—larger than it was the last year; their stock of horses, cattle and sheep are improving, but they have not succeeded so well in raising hogs as they ought; it only requires little attention to raise fine hogs in this country.

"I hear of but few in the nation that do not make more corn than will subsist them; they raise a great many fowls, and those that are situated within from 10 to 20 miles of Fort Washita, furnish it with butter, potatoes, chickens, eggs, &c. The merchants used generally to get contracts to furnish the Fort with corn, but now they are furnished by the Chickasaws. This year the contract is for only seven thousand bushels; the Indians could furnish forty thousand bushels at the contract price, which is 43 cents,—but their corn will be of little use to them, as they have no way of shipping it to any foreign country. Had they navigation, their country would be much more valuable; but they can in this country live very independently."

The Seminoles appear to retain their savage condition with unyielding pertinacity, as an extract from the report of the agent will show. The only mitigation refers to the soil, concerning which the agent remarks :

"The crops have been very abundant, much more being raised than will be required for the subsistence of the tribe; in fact, I think they will bear a comparison, as *agriculturists*, with almost any tribe on this border. Their crops consist of corn, rice, potatoes, pumpkins, ground nuts or goobas, peas, beans, &c. The hunt of last year was, in a measure, unsuccessful, and the Indians have not, in so great a number, engaged in it this fall. The debts which they incurred for goods preparatory to going out last season, have not yet been entirely extinguished, and the price of peltry holds out but poor inducements to the hunter, particularly where game is as scarce as it is in this country."

The following passage from the report depicts the old Indian character, which, we fear, will forbid modification, under all efforts :

"The subject of education is thought about as little of as if it was only intended for white people. They feel themselves, and desire to be consi-

dered, as decidedly beyond the pale of civilization; perfectly satisfied to walk in the 'footsteps of their predecessors,' showing, as far as mental improvement is concerned, a philosophy in being satisfied with their present state, which, considering their being human, is truly astonishing. Other people make serious charges against Providence for their misfortunes, troubles or wants; but the Seminoles never accuse the 'Great Spirit' of doing any injury, but give Him the credit side of the account, and leave Istahutkee to answer for the debit."

The Creeks present a happy contrast. We quote the words of the agent:

"They have become conscious of the advantages accruing to them from receiving and encouraging religion and education, upon which subjects they feel a great interest. The prejudices formerly indulged against the people of the United States have become extinct, and the fostering care and kindness of the general government understood and appreciated. At peace among themselves, and upon the warmest expressions of friendship with their neighbors—with all the elements of prosperity around them,—they present every appearance of a happy and contented people."

"I mentioned in my report of last year that the Creeks would have a large surplus of corn left for sale; so it proved to be, — nearly 100,000 bushels having been exported from the country, a large portion of which was purchased for shipment to Ireland and other foreign countries. It is computed that about 1,000 head of pork hogs were sold during the winter. The large stocks of cattle owned by the Creeks have attracted the attention of drovers from Missouri, Illinois and Indiana, and several hundred head were sold to them during the spring and summer. The crops of the present year are good; though owing to the extremely backward spring and wet summer, not so much surplus will be left as from those of last year. Large numbers of pork hogs will be offered for sale during the approaching winter."

The foregoing extracts, somewhat copious, are submitted to show the condition and prospects of the Red Man in his western home. A statement of missions and schools, however compressed to be intelligible, would extend this notice farther, perhaps, than most of our readers would approve. A report of the Rev. Thomas S. Williamson, for nine months of the school at Kapoja, known as Little Crow's village, states the Indian pupils:

	MALES.	FEMALES.	TOTAL.
Number that read and write legibly	3	4	7
" " but do not write	5	12	17
" spellers	9	11	20
" learning alphabet	2	7	9
	19	34	53
Baptized	8	13	21

Included in the papers which form 186 pages attached to the Report of the Commissioner, is a mass of information relative to the Indians, which the statesman who watches their destiny, the philanthropist who cares for their comfort, and the Christian who is solicitous for their spiritual welfare, may reflect upon with the deepest interest. As such, we commend it to their attention. There are

twenty-five reports from superintendents, agents and sub-agents, and twenty-six in relation to schools and farms.

We recur briefly to the remnant of Indians in the state of New-York, as reported by the sub-agent at Ellicottville. He says :

" The population of the tribes within this sub-agency is gradually increasing, and apparently keeping pace with their improved circumstances. As nearly as I can determine, they number at present, as follows :

Senecas,.....	2,700
St. Regis,.....	457
Onondagas,.....	375
Tuscaroras,.....	300
Oneidas,.....	210
Onondagas residing with the Senecas,.....	140
Cayugas residing with the Senecas, about.....	60
Oneidas residing with the Senecas, about.....	30
Total,.....	4,272

" The season has been highly favorable to the growth and maturity of their crops; and the aggregate produce of the harvest must greatly exceed the supply required for their subsistence. I am happy to perceive among them a growing spirit of industry—slight and gradual, it is true, but still advancing—which is manifested in clearing new lands, enclosing the old with better fences, and erecting and repairing both houses and barns; and there are now but few families who have not comfortable homes and a sufficient supply of the necessities of life."

Besides New-York and Ohio, in which large districts of land have been guaranteed to certain tribes so long as they remain peaceable, a few other states east of the Mississippi contain an Indian population, the whole not exceeding 30,000. Even this number is annually reduced by emigration West. Success, however, does not in every case attend the removing parties. Two summers ago, 176 Indians left New-York, and in twelve months 94 returned, 82 of their companions having died in the West.

To sum up our Indian relations would be an interesting task. When the government was organized, in 1789, there was no state west of the Alleghany mountains. From Ohio to Georgia, in a north and south line, and from the immense tract of country towards the Pacific, now forming a dozen flourishing states, the Indians have disappeared, and are now gathered in the far West, where, for a half century, perhaps, there will be no further demand of possession by the whites. Though having but little faith in the capacity or disposition of the red man to become civilized, our sympathies abide with him in the large hunting grounds, to which his title is no longer precarious.

ART. IV.—NATCHITOCHES AND THE NORTH-WESTERN REGION OF LOUISIANA.

SINCE the pecuniary reverses and distress in Mississippi, occasioned by the credit, banking and bonding system, and all classes on these subjects, the town of Natchitoches has acquired much notoriety, as the point that most unfortunate debtors seek in their flight to the land of strangers. If the story of many that hurry through its streets could be told, how heart-rending would be the details! What vicissitudes! What disappointments! What dreams of happiness broken up, and, by the monster—DEBT. Where could the philosopher or novelist find a better position than in its venerable streets, witnessing, day by day, trains of fugitives, as melancholy as funeral processions! But it is not of these, but of the antiquities of the town, we intended to speak.

St. Denis,* a follower of Crozat, passed from the French colony of Mobile, to the Rio Grande, in 1712. His apparent object was to open a traffic with the people of New-Spain, but his real design was to explore the Spanish territories, and extend the French dominions therein. St. Denis settled several Frenchmen at the point where Natchitoches now stands, which was then the chief town of the Natchitoches Indians. In 1717, the Governor of Mobile sent a captain with a band of soldiers to garrison the place. As soon as the Viceroy of Mexico, the Duke de Linares, heard of these movements, he despatched troops and missionaries into Texas; and on the 21st May, 1717, Alonzo de Leon notified him, that he had constructed a fort called San Miguel de los Adaes, within five leagues of the French post. Wherever a Frenchman settled, a Spaniard immediately followed. The jealousy of the Spanish government is strongly illustrated by an incident that occurred in 1642. The old fort at Natchitoches stood on the bank of the river.† It was inundated and endangered by the greatest flood ever known there, before or since. The French commandant obtained leave from Don Manuel Sandoval, the Spanish Governor of Adaes, to move it a musket-shot farther back. The Viceroy of Mexico, disapproving of this concession, though granted under such peculiar circumstances, despatched Colonel D. Brito to Adaes,‡ to supersede Sandoval, and to send him under guard to Mexico, where he was court martialed and dismissed the service. The Spanish Governor afterwards received orders to

* "St. Denis" street is the principal business street in Natchitoches.

† The first French fort in Natchitoches was situated immediately on the bank of Red River, below Bayou Muler, and was removed in the year 1721 to the high ground, about one hundred yards west of its former site, where the old cemetery now is, and where vestiges of the old fort can yet be seen.

‡ An Indian name, generally written "Adayes," situated about fifteen miles west of Natchitoches.

drive the French from both Natchitoches and Natchez, and advance with his forces to execute the order; but the French commandant at the former place, either by bribery or that adroit diplomacy for which his nation is distinguished, induced the Governor to suspend his march until the two courts could be heard from, and in the interim to consider the *Arroga Hondo*,* midway between Natchitoches and Adaes, as the line of demarcation, and so it remained until 1763, when Louisiana was ceded to Spain, by whom it was re-ceded to France some years afterwards, and, as our readers know, sold by Bonaparte to the United States.

The mission of Adaes grew to be a village of considerable importance, having a population made up of veterans from old Spain, Mexican, and the mongrel race of Indian and African blood, which constituted so peculiar a feature in the settlements made by the French and Spaniards on the continent. In 1805, it was visited by the Bishop of the new kingdom of Leon, Don Feliciano Mariro, who celebrated high mass, christened two hundred children, and consecrated a graveyard. But the town has now almost disappeared, and scarcely supports a solitary priest. Three years ago, however, the straggling village could still boast some bright-eyed senoras, with just enough of Castilian blood to give that *hauteur* of manner, which on very, very beautiful women, sits gracefully enough—and few Spanish ladies are not beautiful—

* * * * "pale,
 Their dark eyes flashing through their tears,
 Like skies that rain and lighten; as a veil,
 Waved and o'er shading the rich cheek, appears
 The streaming hair; the black curls strive, but fail
 To hide the glossy shoulder which uprears
 Its snow through all; the soft lips lie apart,
 And louder than their breathing, beats the heart."

Natchitoches itself has seen great vicissitudes, and in its chronicles are hidden many a legend of love, heroism and romance, political intrigue and frontier adventure, dating back to the period when the lilies of France first waved over it. In 1806, the Spaniards under Cordero crossed the Sabine and marched to Adaes, the Spanish General, Herrera, and the Captain General, Salcedo, avowing a determination to enforce their jurisdiction to the west bank of the Mississippi. Great excitement prevailed in the territory of Orleans and in this vicinity. On the 8th May, Maj. Gen. Wilkinson ordered Col. Cushing to descend the Mississippi with the 1st regiment United States infantry from St. Louis, and repair forthwith to Natchitoches. He likewise ordered Lieut. Col. Kingsbury to march with the regular companies from Fort Adams, and he made a requisition on the governors of the two Territories, which was promptly complied with. A gallant body of infantry and dragoons marched from this city, a few only of whom now survive. Gen. Wilkinson concluded his order to Col. Cushing with these burning words, which we extract from the manuscript now before us:

* Should be written "Arroyo Hondo," signifying Deep Creek.

"Learn, with all possible precision, the force, composition, and station of the troops opposed to you; be yourselves prepared for combat; and, if a conflict must ensue, having previously animated your men by a strong exhortation, and sworn your officers in their presence to fall or conquer, make your onset with the bayonet; and your own glory, the honor of your arms, and the integrity of the nation, will be insured."

In the meantime, the Spaniards fell back to the Bayou Pierre,* where they fortified themselves. At this juncture, the Major General reached Natchitoches, and the troops from the Mississippi Territory, and about four hundred Louisiana militia, were eagerly pressing on, expecting to attack the Spaniards, and then to plant the American Eagle on the banks of the Rio Grande. On the 27th September, the Spaniards, for a reason never yet satisfactorily explained, abandoned their entrenchments on the Bayou Pierre, and on the 30th, took up a strong position on the west bank of the Sabine, near what is now known as Gaines' Ferry. Gen. Wilkinson's movements appear dilatory, but it must be remembered that his antagonist had a vast superiority of force, and the ancient lustre of their arms had never been dimmed by the Anglo-Saxon sword. On the 28th October, Gen. Wilkinson issued, from the Camp La Piedra, 26 miles west of Natchitoches, an order, which seemed to indicate the expectation of a general and *immediate* attack. But no battle was ever fought; the Mississippi troops were ordered back, chagrined and disappointed; flags of truce were exchanged, and negotiations took place, which resulted, on the one hand, in the withdrawal of the Spanish army, and on the other, in imputations on the honor of the American General. We will, at a future day, be able to produce new testimony on this point, in endeavoring to place before the country a full developement of the designs and connections of Aaron Burr. It was at Natchitoches, while collecting forces for his march to the Sabine, that Gen. Wilkinson received, on the 8th October, the celebrated letter from Col. Burr, in cipher, by the hands of Mr. Swartwout, since become so notorious in New-York.

The old town remained comparatively quiet after this, until 1810-'11, when the revolutionary spirit, which finally eventuated so gloriously in the establishment of the Texian Republic, first began to agitate its streets and coffee-houses. The expedition of Gen. Toledo, its first success and disastrous termination, is well remembered, but belongs rather to the history of Texas. In 1811-'12, large parties of adventurers assembled between the Arroya Hondo and the Sabine, (then called the neutral ground;) many of them were from this vicinity, but they were dispersed by the United States military authorities at Natchitoches, and their huts burned down. From similar materials, and animated by a similar spirit, was formed

* Now in the parish of De Soto, about sixty miles north-west of Natchitoches. The last Spanish Governor of the post of Bayou Pierre was Don Manuel de Soto, who has two grandsons, Remy and Simon, now residing there.

the army that triumphed on the ever memorable field of San Jacinto.

Thus it will be seen, that in point of age, this venerable town outranks New-Orleans. In historic interest, it is scarcely inferior. Far buried in the depths of the richest fluvial region on the continent, it was visited by the boldest and earliest adventurers of the new world, and fixed upon by rival nations as a point not only of traffic, but of empire. Numerous and powerful tribes, of a mysterious and melancholy race, once surrounded it, whose hostility was soothed, and whose subtlety baffled, for a long term of years, by the inimitable address of a few Frenchmen—habitually as courteous in a forest lodge as in the saloons of Paris. That these traditions and reminiscences have not all been lost, we shall one day show. That many things connected with the history of the place and with the aborigines of Red River, whole nations of whom are now extinct, have been preserved, we have reason to believe. At a very early day, two brothers, of great enterprise and liberal attainments, settled in the west. They were the friends and correspondents of Mr. Jefferson. We have, ourselves, several long and interesting letters addressed by them to a very near relative of ours, now no more. One of them was, for many years, Indian Agent on the confines of the Missouri, and knew intimately every tribe between the Salt plains on the head waters of the Arkansas and Red rivers, and the great lakes of the north. The other, Dr. Sibley,* lived at Natchitoches, and was more familiar with the early history of Louisiana and New Spain than any man living. A few years ago we were arranging to visit him, when the intelligence reached us that his well-spent and honored pilgrimage was over. We hope, however, that he left memorials behind, that will one day be given to the public.

ART. V.—A PROFESSORSHIP OF COMMERCE.

L'ignorance des negocians vient, de ce que dans leur commencement ils manquent ils d'instruction, n'ayans pas fait leur apprentissage chez d'habiles marchands, qui ayent toutes les qualitez requises pour bien montrer le commerce. Il est impossible qu'un negociant, réussisse dans prises, s'il ne sçait parfaitement sa profession.—DE SAVARY.

THE new university which, by the munificence of the State of Louisiana, is established in the city of New-Orleans, has, we believe, been the first institution in modern times, and certainly in our own country, to perceive the importance of elevating the mercantile classes to the same rank as the learned professions, by especially endowing a chair to be devoted forever to the propagation of mercantile knowledge.

* Dr. John Sibley died in the latter part of the year 1838, then more than eighty years of age. His son, Dr. Henry Sibley, of the Parish of Rapides, is now in possession of his valuable papers and manuscripts.

In this there should be found by our citizens something of gratulation ; and there can be little question, in the progress of time the most abundant harvest of good will be realized.

That a merchant should have taken the lead and direction in this matter, (we allude to Maunsel White, Esq.,) was natural enough ; and that a community, so purely commercial in its character as ours, should have sustained the movement, was equally to be expected. We say purely commercial, for, by reference to the returns of the census in 1840, it will be found that 1 in every 41 persons in the State of Louisiana are employed in this pursuit, and in the city of New-Orleans 1 in every 13 ! a much higher average than in any other state or city in the Union. Indeed, Baltimore shows but 1 in 51, Charleston 1 in 43, Boston 1 in 44, Philadelphia 1 in 29, and New-York 1 in 27 !

We have taken great pleasure, from time to time, in the pages of our Review, in calling the public attention to this matter ; and having now a little time and space at our disposal, will continue the subject.

It is about eighty years since Malachy Postlethwayt, in one of the chapters of his immense and most learned *Universal Dictionary of Commerce*, advocated the establishment of a Mercantile College in Great Britain, and suggested some thoughts for its organization. His views were not adopted, as we believe, to the great detriment of the commercial classes. Nevertheless, it will be proper to make some references to his plan.

Without an acquaintance, says Mr. Postlethwayt, in the produce and manufactures of the commercial world, and in the laws of our own and foreign countries in relation to general trade ; without abilities to obtain the best intelligence, in order to strike the critical time when and where, exportation or importation from nation to nation, drawing, remitting, and negotiating foreign bills, invise to the best advantage ; without knowledge of the duties, imposts, subsidies, drawbacks, bounties, and all other charges and allowances at home and abroad, to which trade is subject, it is impossible that any previous calculation can be made, whether an adventure will turn to account or not.

To the ignorant, commerce is but a game of chance, where the odds are against the player. But to the accomplished merchant it is a science where skill can scarce fail of its reward ; and while the one is wandering about on a pathless ocean without a compass, and depends on the winds and tides to carry him into port, the other goes steadily forward, in a beaten track, which leads him directly, if no extraordinary accident intervenes, to wealth and honor. Such, indeed, is the strength of natural discernment in some, and such sometimes the uncommon attention to business of others, that they make little difficulty in breaking through every obstacle to knowledge, if they obtain but a glimmering light. The case of the generality is far different.

Our author now refers to several particulars which he would have introduced into his college :

The most concise and practical methods of converting sterling money into the monies of exchange throughout the world; the intrinsic value of foreign coins, &c.; a comparison of the foreign weights and measures; the business and duties of the custom-house; tariffs, imposts, &c., in all countries, &c. &c.

In regard to the preparation of letters of trade, as he calls them, he observes, that an eminent British merchant declared, that his being capable of corresponding in a manner something superior to the generality, was the means of getting him a very good estate from a very small beginning; this talent having brought him a very large commission business.

Though every merchant should not be his own book-keeper, yet our author argues, his acquaintance with the subject should, nevertheless, be ample. It is justly proverbial among the Dutch, that the man who fails did not understand how to keep his accounts; and it may be truly said, that a merchant without that skill is in as bad a situation as is the mariner on the wide ocean, without a chart or compass whereby to direct his course.

The next step is to give the young merchant a knowledge of the trade and commerce of the world.

1. Our national produce and manufacture, being more than our consumption, a part is exported, and in return, foreign goods or bullion, or both, are brought home.

2. Selling the goods in one port, and loading there to sell at another, whereby a larger profit is made than if the goods exported had been carried directly thither.

3. Bringing away the produce and manufactures of other countries from whence and when they are cheap, to supply countries when and where they are dear.

4. Bringing home the produce of other countries and exporting the same in manufactures.

5. Freight and hiring out shipping to various parts of the world.

No employment requires a more ready use of the principal modern languages, than the mercatorial. A collegiate institution would be judged materially deficient, if destitute of professors to train up those students properly therein; wherefore, for whatever branch of trade the young merchant may be intended, he should, through the course of this education, be able to obtain a knowledge either of the French language or the Italian, the Spanish, the Portuguese, or even the Dutch, high or low; and, indeed, a facility of writing in several or all of them is necessary for the general foreign merchant, &c.

Mr. Postlethwayt urges then a knowledge of geography, navigation, mathematics, &c.; the municipal and mercantile law of the country; the general principles of the laws and treaties of nations; and above all, the finances of his own and other countries.

A few references to some of the most influential and useful merchants of other days, will conclude our hasty sketch.

At the period of the successes of the Duke of Marlborough over

the French, Charles Coke, a merchant, made so clear a defence of the British trade at the bar of the House of Lords and Commons, that he was afterwards chosen a member and knighted. Sir Theodore Janssen, also a merchant, distinguished himself at the same time.

Charles V. of Germany, reduced to great distresses by the expedition of Tunis, experienced a powerful succor in money, of the Fuggurs, a single family of merchants. These merchants requested the Emperor one day to do them the honor of regaling in their house. After the entertainment they burnt faggots of cinnamon in the hall, enveloped with the bonds they had received from his majesty.

The merchants of St. Malo, in the distresses of France, laid down thirty-two millions in gold at the foot of the throne, for the purpose of carrying on the war.

Sir Thomas Gresham, a merchant, founded that magnificent institution, the Royal Exchange of London. The counsels of this eminent man were of the utmost importance to the reigns of King Edward, Queen Mary and Elizabeth. He became known as the Royal merchant.

Sir Thomas Sutton rendered the most signal services to the nation in retarding, by his address, the sailing of the Spanish Armada one whole year.

And, finally: the merits of persons of distinguished character in trade, cannot in general be measured but by those who are well acquainted with their trading negotiations. As they pass through life without much eclat, the world is little acquainted with their important services and utility to the state, whilst the histories of men in great public capacities, are transmitted to posterity with all the pomp and magnificence of representation. Yet, certainly that is the more profitable admonition, which is drawn from the eminent virtues of men who live in a sphere nearer levelled to the common reach, than that which is derived from the splendid portrait of the victories and transactions of great statesmen and commanders, which serve for the imitation of few, and make rather for the ostentation than the true instruction of human life. It is from the practice and example of persons from the private condition, that we are more naturally taught to excel in our private capacities; and had we the genuine histories of many eminent merchants, giving a lively idea of their rise and progress in business, and of the important service they have been to their respective governments, they would naturally incite the leading part of the nation to emulate their accomplishments, and this would prove a more effectual means to produce a race of skilful British traders than romantic narratives of a race of heroes!*

* We have, in a large portion of this paper, given the language of Mr. Postlethwayt. See Commercial Review, Vol. III., IV. and V. for our own thoughts upon all these matters.

Art. VI.—SUGAR MANUFACTURE.

THE inestimable work of Dr. Evans, of London, issued a few months since from the press, having not been re-published in our country, though of the greatest importance to sugar producers throughout the southern states, we have concluded to present it in parts, for the benefit of all who may, in any way, be interested in the sugar industry. Various applications have been made to us by the most practical and scientific planters, to undertake this publication, and we consent to do it, in the full assurance that no more signal service could be rendered to the community. The work is not voluminous; and the reader will already have some general knowledge of it, from the references made by us in the numbers of the Review for October and November, 1847.

CHAP. I.—PLANTS, THEIR MODE OF GROWTH AND DEVELOPMENT.—
PROXIMATE VEGETABLE PRINCIPLES.—NON-AZOTIZED.—AZOTIZED.
—CATALYSSIS.—SALTS.

To prosecute with success any branch of art or manufacture, a knowledge of the principles on which the art or manufacture is based is indispensable. It will, I think, be admitted, that of two persons pursuing the same industrial occupation, the one who brings to his assistance an acquaintance with the laws, by the operation of which the effects sought to be obtained are governed, will possess advantages over the other, and that his efforts will present a greater chance of success.

The object of the sugar-maker is that of separating from *cane-juice*, a fluid composed of a great variety of substances, one of its components, *sugar*, in the greatest abundance and most marketable form. This operation is essentially a chemical one; and although it may not require that the person performing it should be a chemist in the full sense of the word, yet some acquaintance with that science would prove beneficial to him in many respects.

It is owing to the cultivation of the beet-root, and the art of extracting sugar from its juices having fallen immediately under the observation of the chemists of Europe, and having, consequently, received all the assistance that science could bestow, that that branch of industry has made, within a few years, such a great and rapid development; whereas, on the other hand, it is chiefly from the want of such aid that the sister art in the colonies remains to this day almost in its primitive state. Far removed from the sphere of European science, the planter cannot avail himself of the advantages of its immediate assistance at any moment that he may require it; he must trust exclusively to himself and his own resources in every emergency that may arise; therefore, an adequate knowledge of his profession is even more necessary to him than to those who follow a corresponding occupation in Europe.

That the reader may more clearly comprehend the principles on which the manufacture of sugar is based, I shall lay before him a slight sketch of a few of the *chemical and physiological* facts from which they have been deduced. To enter as fully as I could desire upon a subject so interesting, would require a space far beyond the limits of a work like the present: I must, therefore, refer those who are desirous of prosecuting it to other sources of information.

The more perfectly organized vegetables consist essentially of three parts—the root, the stem, and the leaves. By the root the plant is fixed in the soil; whilst its stem, branches, and leaves are expanded in the atmosphere. The organs which enter into the formation of the stem are the *cellular tissue*, the *vessels*, the *woody fibre*, and the *bark*; but they are found arranged in a different manner in the two subdivisions of the phanerogamæ, or flowery plants. In *exogens* these parts are separated by distinct lines of demarcation. The cellular tissue is in the centre, in the shape of the pith, and in the medullary rays, which, diverging from the former, run towards the circumference. Around the pith are placed the vessels and woody tissue in concentric circles. These are surrounded by the bark which is very distinguishable and easily separated. In the *endogens* the cellular tissue is diffused through the entire stem, the vessels and woody fibre being dispersed irregularly through it; and the bark, instead of being slightly attached to the parts within it, can be with difficulty distinguished, owing to its being gradually blended with them.

The roots as they leave the lower part of the stem present a similar structure to the stem itself, but towards their extremities they consist merely of bundles of vessels surrounded by white, soft, and spongy cellular tissue. It is by these spongy extremities that the liquid and gaseous matters enter into or escape from the interior of the root.

The branches, when they exist, are mere expansions of the stem; and the leaves may be considered as a still further extension of these parts, for the vessels and woody fibre are continued into them. Interspersed through the leaf and between the ramifications of its fibres is a cellular tissue and a green colouring matter, called *chlorophylle*.

It is obvious that a plant must receive its nourishment either from the soil in which it is fixed by its root, from the atmosphere by which its stem, branches, and leaves are surrounded, or from both sources. Numerous experiments have established that the latter is the case.

All soils consist essentially of inorganic salts, some of which are soluble, others insoluble, in water; variable proportions of organic matters; and of water, holding in solution a little of the former and certain gases, particularly carbonic acid and ammonia, which result from the decomposition of the latter. Carbonic acid is composed of the two elements, *carbon* and *oxygen*, and ammonia of the two elements, *hydrogen* and *nitrogen*.

The atmosphere consists of a mechanical mixture of *nitrogen*, *oxygen* and *carbonic acid*, in the proportion of 75.55 parts by weight

of the first, 23.32 parts of the second, and 0.1 part of the last in 100. To these is added a variable quantity of watery vapour.

If these be the only sources whence vegetables can obtain their nourishment, it follows that whatever be the substance produced by the vital processes going on in plants, its chemical composition must consist of a combination of one of the four elements, oxygen, hydrogen, nitrogen, and carbon.

The water holding some of the fore-mentioned substances in solution is absorbed from the soil by the spongy extremities of the root. Thus combined, it constitutes what is called the crude sap, which is ultimately carried by the vessels of the stem to the leaves, where it undergoes a great change. In the first place, a large portion of it is eliminated by a process called *exhalation*, and which resembles that of perspiration in man. Secondly, the carbonic acid is decomposed, the oxygen being set free and evolved into the atmosphere, while the carbon remains; and, lastly, a quantity of carbonic acid is likewise absorbed from the surrounding atmosphere, which is likewise decomposed in a similar manner.

These processes are very much expedited by solar light and heat. During night the evolution of oxygen by the plant ceases—indeed, the reverse takes place, for it now emits carbonic acid and absorbs oxygen. Still, as a general rule, the quantity of carbonic acid given off during night is far from being equal to that which is absorbed during the day.

The sap having thus been deprived of a great portion of its water, and its carbonic acid having been converted into carbon, has necessarily undergone a great chemical change; and being now fitted for the purposes of nutrition, it commences its descent through the stem.

Besides the power of absorbing fluids and gases, the root possesses the faculty of separating from the sap certain excrementitious substances not essential, probably injurious, to its nutrient qualities. From this cause soils are often impregnated with matters excreted by one kind of plant which may materially affect others which have been subsequently grown upon it.

It is this faculty that vegetables possess of extracting their nourishment from inorganic matter, that constitutes the great characteristic distinction between them and animals. Plants may, therefore, be considered as the great purveyors of food for the whole animal creation, every member of which, either directly or indirectly, depending upon them exclusively for its supply.

If what I have stated be true, animals and vegetables must necessarily be composed of the same ultimate elements, and such, indeed, is found to be the case; and in the great operations of nature, each of these two classes of created beings mutually provides sustenance for each other.

All organic substances, that is, all substances which owe their origin to vital action, whether obtained from the animal or vegetable kingdom, are composed of four elementary bodies only, namely, *oxygen*, *hydrogen*, *carbon*, and *azote* or *nitrogen*; two others only,

sulphur and phosphorus, being occasionally associated with some of their compounds.

This paucity of ultimate elements is compensated by the wonderful property which the four first mentioned possess of forming with each other almost innumerable combinations. We see the result of these combinations hourly in all the various products of the organic world; in that incomprehensible centre of human thought and intellect, the brain of man; in the structure of the most simple cell which constitutes the earliest rudiment of vital tissue; in the hardest timber, or in the soft and fragile mould and mildew. Now we view them in the form of chrystal; at another time as a powerful acid; again as a bland and liquid mucilage, or as the most intense of the known poisons.

The affinities which bind these elements together in all such compounds are weak and easily disturbed when the force by which they were originally produced has ceased to exist, and the laws of inorganic matter have come into play. The carbon and oxygen then have a tendency to combine and form carbonic acid, and hydrogen and nitrogen to form ammonia.

All the proximate principles which enter into the structure of a plant are formed by a blending together of these elementary bodies in various proportions; but as some of them contain nitrogen, and others do not, they are divided accordingly into the non-azotized and azotized proximate principles.

The non-azotized proximate principles of vegetables are very numerous. They are subdivided into those in which the carbon is united to the oxygen and hydrogen, in the proportion of each necessary to form water; and into those in which this proportion of the two latter elements is not observed. Of the former, those which offer the greatest interest to the planter are the following: *dextrine, starch, cellulose* or cellular tissue, *lignin* or woody fibre, the various *gums, mucilage*, and *sugar* of different kinds.

Dextrine is an essential component of the sap of all plants. As it possesses the same chemical composition as starch and gum, and many of the physical properties of the latter, it has been frequently confounded with it; but there is one essential difference between the two, that dextrine is capable of being converted into sugar by the action of sulphuric acid or diastase, but gum does not possess this property. Gum, too, may be considered more in the light of an excretion or exudation on the surfaces of plants, than an essential component of their juices.

Dextrine would appear to be the source whence the greater number, if not all, the organs of a plant are formed. We are justified in assuming that the sap contains in solution the substances necessary for the construction of the entire fabric of the vegetable. The only materials whose nature admits of their solution, of all those found in vegetable non-azotized bodies, are dextrine and sugar; but many full-grown plants contain an amount of sugar quite insufficient for the purpose, while dextrine is found in all. There are, however, exceptions; for instance, in the sugar cane the quantity of sugar is

incomparably greater than that of dextrine, particularly when the plant has acquired a certain age. But even in this case it is not improbable that the sugar may be converted into dextrine previously to its ultimate conversion into the other tissues.

The chemical composition of dextrine is comprised in the formula: carbon, 12 atoms; oxygen, 10 atoms; and hydrogen, 10 atoms. As the amounts of the two latter elements are equal to 10 atoms of water, dextrine may be said to be composed of 12 carbon + 10 water.

Starch.—This proximate principle is very generally diffused through the vegetable kingdom. When removed from the plant in which it has been formed, it is found to consist of minute granules, each of which, when viewed under the microscope, has the appearance of a globular or spheroidal cell, and is composed of a substance very analogous to gum, enclosed in a thin, but very firm envelope, to which its consistency is owing. These grains resist the action of many chemical re-agents; but when exposed to a heat of 180°, the pellicle bursts, and its contents are liberated. This is the explanation of the fact, that starch dissolved in hot water can never be restored to its original form. When in this state of solution it is quickly converted into dextrine by the addition of a small quantity of sulphuric acid or diastase, a substance presently to be described. If this mixture be boiled for some time, it gradually acquires a sweet taste, from the conversion of the dextrine into one of the varieties of sugar, *glucose*.

Starch forms a large proportion of the weight of those seeds and roots employed by man as food. Its use in the economy of the plant appears to be as a *dépôt* of nourishment set by for its future exigencies, being admirably adapted to the purpose from its easy conversion into dextrine or sugar. We have an interesting example of these changes in the germination of seeds. The composition of starch is identical with that of dextrine.

Gum.—The variety of gum with which we are best acquainted is the produce of several species of acacia. It exudes from the branches and stems of these trees, and is collected in rounded drops or tears. A substance closely resembling it in every respect results from changes produced by certain re-agents on sugar. Gum, however, that is, the substance known as gum-arabic, cannot be converted into sugar by any means with which we are acquainted. Its composition is the same as that of the before-mentioned proximate principles.

Mucilage is closely allied to gum in many of its properties. It enters into the formation of certain parts of many vegetables, as in linseed, quince seed, in the roots of the mallows, &c., and is the chief constituent of gum-tragacanth. By the addition of sulphuric acid, it is convertible into glucose, or the sugar of fruits. According to Mulder, its composition is, carbon, 24; oxygen, 19; hydrogen, 19; or carbon, 24 + water, 19.

Cellulose.—This proximate principle constitutes the cellular tissue of all plants. Mulder states, that in combination with the in-

crusting matter, which is deposited upon the cells, woody fibre, and vessels, for the purpose of adding to their strength and powers of resistance, it enters into the formation of all these parts. It consists of 24 atoms of carbon, united to 21 atoms of oxygen, and 21 atoms of hydrogen; or carbon, 24 + water, 21.

Woody-fibre, obtained from newly-cut wood which has been boiled in successive portions of water and alcohol, according to Dr. Prout, is composed of carbon, hydrogen, and oxygen, in the proportions required to produce the formula: carbon, 12; hydrogen, 8; oxygen, 8; or carbon, 12 + water, 8.

Whether woody-fibre or lignine, as it is sometimes called, is really a substance different from cellulose, as the composition of each as given above would lead us to believe, or whether these differences of composition may result from a combination with some other matter in one case which does not exist in the other, it would be difficult to say; nor is it necessary for our purpose to inquire. They are both composed of carbon + water, the ratio which the one bears to the other being the only difference observed.

Sugar.—This substance is not exclusively found in the vegetable kingdom. Two of its varieties are found in excretions from animal bodies, namely, the sugar of milk, and that obtained from the urine of patients laboring under a peculiar disease. A third variety can be obtained from the gelatinous tissues of animals, by the action of sulphuric acid; but as it differs from all the others in containing a small quantity of nitrogen, it is questionable whether it deserves a place in the category of these substances. The principal kinds of sugar found in vegetables are three, namely, cane-sugar, glucose or the sugar of fruits, and mannite or the sugar of manna.

Glucose.—It is to this variety of saccharine substances that most of our well-known fruits owe their sweetness; it is the sweet principle of brewers' wort, and is also found in many other vegetable substances. Although it possesses many of the properties of cane-sugar, it, nevertheless, has other important peculiarities, which render it easily distinguished: first, it is uncrystallisable; secondly, it undergoes the vinous fermentation with great readiness; and, lastly, it has a different composition, consisting of 12 atoms of carbon, 12 of hydrogen, and 12 of oxygen + 2 atoms of water, with which it is combined as with a base, and which it loses when it enters into combination with other bases. As found in nature in the state of a hydrate, or, in other words, combined with its basic water, it consists of carbon 12 + water 14.

Mannite.—This is the chief ingredient of manna, an exudation from a species of ash; it is also found in the juices of many other plants, particularly in those of New South Wales, and in certain seaweeds. Cane-sugar, when in a peculiar state of fermentation, is partially converted into it. Mannite crystallises in tufts of slender colorless needles. It cannot be made to undergo the vinous fermentation. According to Dr. Prout, it is composed of carbon, 15 atoms; hydrogen, 16 atoms; and oxygen, 16 atoms; or carbon, 15 + water, 16. Whether any of this water is basic is unknown.

Cane Sugar.—It is this variety of sugar that constitutes the substance so well known under this name. As a detailed account of its chemical and physical properties will be given hereafter, it will be sufficient, at present, merely to state its composition, which consists of carbon, 12 atoms; hydrogen, 10 atoms; and oxygen, 10 atoms + 1 atom of water with which it is, in its ordinary condition, always combined as with a base. It may be then said to be composed of carbon, 12 + water, 11.

A glimpse at the following table, in which the names and composition of the proximate principles described above are placed in juxtaposition, will show us the chemical resemblance they bear to each other, and enable us to understand how bodies so dissimilar in their physical properties may be mutually converted into each other from slight disturbing causes:—

Dextrine consists of	carbon	12 +	water	10
Starch	"	12 +	"	10
Gum	"	12 +	"	10
Cellulose	"	24 +	"	21
Lignine	"	12 +	"	8
Macilage	"	24 +	"	19
Glucose, or sugar of fruits	"	12 +	"	14
Mannite	"	15 +	"	16
Cane sugar	"	12 +	"	11

It is evident the conversion of any one of these bodies into any of the others is effected by the addition or subtraction merely of a small quantity of the elements of water. Thus, by the addition of three atoms of water, cane sugar is converted into glucose, and by a still less amount it may be transformed into dextrine.

These operations are continually going forward during the life of every plant, and many of them are daily performed in the laboratory of the chemist. By the action of heat, saw-dust may be converted into a nutritious substance, capable of undergoing the vinous fermentation, and which has all the chemical properties of starch. Sulphuric acid likewise produces a similar effect upon it.

When starch is exposed in an oven to a temperature of 300°, it is converted into a substance called British gum, which is extensively employed in the arts: it is dextrine. When starch is boiled with sulphuric acid, glucose is produced. This constitutes an extensive manufacture both in France and Germany, the syrup thus prepared being used for the purposes of brewing and distilling.

These are but humble imitations by man of the great transformations effected by nature in the growth and development of all vegetables. To be able to understand more clearly how these wonderful effects are produced, it will be necessary to examine the other proximate principles of plants into the composition of which nitrogen enters as an essential element.

THE AZOTIZED PROXIMATE PRINCIPLES.

Although the mass of vegetable fabrics consists of carbon, hydrogen, and oxygen, there are other principles found in some part or other of all plants which require nitrogen for their formation. As

compared with animals the amount of these substances, it is true, is but small, but their presence is not the less necessary; for some of the most important functions of the vegetable economy could not be performed without them. Nitrogen is found in every plant from the period of its earliest development. The substances into the composition of which this element is essential are very numerous; but those which it more immediately concerns us to examine in this place, from their universal presence throughout the whole of the vegetable creation, are the bodies which, from their resemblance to similar constituents of animals, have been denominated albumen, fibrine, and caseine, the term vegetable being prefixed to each to denote its origin.

There are also two other bodies which exist in plants, but which are not found in animals: the one is a compound of fibrine and a substance called gliadine, and known by the name *gluten*; the other is found only in germinating buds and seeds, in which it exists in considerable abundance; it is merely a modification of one of the above nitrogenised principles, and is called *diastase*. These three first-mentioned nitrogenised principles approximate very closely in their chemical composition; indeed, they are compounds of a base *proteine* united to a very small quantity of either phosphorus or sulphur, or both. Proteine, from which soever of these sources it is obtained, always presents the same chemical composition. 100 parts yield—

	From albumen.	From fibrine.	From caseine.
Carbon . . .	55.30 . . .	55.44 . . .	55.16 . . .
Hydrogen . . .	6.94 . . .	6.95 . . .	7.17 . . .
Nitrogen . . .	16.02 . . .	16.05 . . .	15.86 . . .
Oxygen . . .	21.74 . . .	21.56 . . .	21.81 . . .
	100.	100.	100.

These numbers give the empirical formula; carbon, 40; hydrogen, 31; nitrogen, 5; oxygen, 12.

Vegetable albumen.—The substance to which this name has been applied is a compound of proteine, containing in 100 parts 0.33 part of phosphorus, and 0.68 part of sulphur. The white of an egg, or the serum of the blood, will give us an idea of this body as it is found in animals. In vegetables it is found in almost all parts of their structure. It occurs largely in their fresh juices, from which it can be thrown down in a solid form by many re-agents.

When exposed to heat, albumen solidifies or coagulates, but the temperature required to produce this effect varies with the amount of the substance dissolved. If the amount equal that contained in the white of an egg, 145° of heat suffices; but if the solution be very dilute, boiling is required, and the albumen then separates in the form of a light white flocculent precipitate. The soluble salts of lead, tin, bismuth, silver, and mercury, form insoluble compounds with albumen, and thus throw it down from its solutions. The diacetate of lead has the power of effecting this entirely. The mineral acids also precipitate it more or less, particularly the sul-

phuric, nitric, and metaphosphoric. Alcohol and infusion of galls produce a similar effect.

In dilute caustic alkali albumen dissolves with facility.

The second variety of proteine compounds found as a proximate principle in vegetables is *fibrine*. This substance, as already stated, exists in a solid form, often combined with gliadine, in the seeds of certain plants. It is also found in solution in their juices, from which it is seen to separate in thin thready fibres, when removed from the influence of the vital action. It contains 0.33 part of phosphorus, and 0.36 part of sulphur in 100.

The third proximate vegetable principle containing nitrogen, is likewise a proteine compound. From its similarity to the characteristic azotised component of milk, it has been denominated *caseine*; and from its existence in considerable abundance in the seeds of leguminous plants generally, as in peas, beans, &c, it is sometimes called legumin. It is also found in solution in most vegetable juices. Its solubility, however, is owing to the presence of an organic acid, or an alkali; for in pure water it is perfectly insoluble. As it exists in milk, it is rendered soluble by a certain amount of free alkali, which is likewise present in this fluid; and on the addition of an acid which can destroy this combination, the caseine, being no longer soluble, is separated in the form of curd. In vegetable juices for the most part this substance is kept fluid by the presence of an acid; the addition of an alkali or alkaline earth, therefore, is required for its precipitation. This explains in some measure the use of lime in the clarification or defecation of cane juice. It also teaches us that the amount of lime required is that which is sufficient, *and no more*, to render the liquid neutral. Heat alone is incapable of coagulating caseine, or precipitating it from its solutions, the only effect produced by its action being the formation of a thin skin or pellicle on the surface of the fluid, as we see in milk when thus treated. Infusion of galls separates it from its solution more or less completely in the form of a brownish precipitate. Diacetate of lead, sulphate and muriate of lime, the hydrates of alumina, and most of the metallic oxides when in a nascent state, produce even more completely this effect. One hundred parts of caseine contain 0.36 part of sulphur. Phosphorus does not appear to enter into its composition.

Diastase.—This name has been given to a nitrogenised substance, which is soluble in water, and which is found in germinating seeds, and buds in the act of development. It is merely a modification of one of the above azotized proximate principles, and can be obtained from any of the before-mentioned sources, by infusing it in cold water. Its use in the economy of the plant has been ascertained by direct experiment. If a little infusion of malt or germinated barley be mixed with a large quantity of thick gelatinous starch, and the whole be maintained at a temperature of 160°, a complete liquefaction takes place in the space of a few minutes. On evaporation a yellowish white powder is obtained, perfectly soluble in water: it is *dextrine*. If the operation be continued for a few hours, the mix-

ture acquires a sweet taste; and if it be now evaporated, it will yield glucose, or the sugar of fruits.

From this experiment it is evident that by the action of diastase, starch can be converted into dextrine and one of the varieties of sugar.

Starch, as I have stated, from its insolubility in water, is incapacitated from performing any *active* function in the vegetable economy. It may be considered merely as a store of aliment set by for the future exigencies of the plant. Wherever it is found, [and be it remembered its existence in vegetables is far from being universal] it is sooner or later associated with diastase, under the influence of which it is rendered soluble, in the form of dextrine or sugar, by which means only can it be fitted for the purposes intended by a provident nature. Thus transformed, it becomes a nutritious principle, from which the vessels, woody-fibre, and cellular tissue are produced; or it may again be deposited in its original form. How wonderful are all these phenomena, and how admirably adapted to the great purposes of creation!

The quantity of diastase requisite to produce these changes is very small, one part of this substance being capable of converting two thousand times its weight of starch into sugar.

The transformations above described are effected in a very different manner from those which are produced by ordinary chemical actions. In the latter case, where decomposition is effected by the interposition of a new agent, it is by the superior attraction of that agent for one of the elements of the former combination. Thus, when sulphuric acid is poured upon carbonate of lime, the carbonic acid is liberated and the sulphuric acid takes its place, forming the new compound, sulphate of lime. But in the changes which we are examining, whether produced by heat, sulphuric acid, or diastase, no such substitution of the disturbing agent occurs; for neither the heat, nor the acid, nor the diastase are found to have combined with the elements of the substance acted upon. To distinguish this class of actions from those of ordinary chemical affinity, Berzelius has given it the appellation of *catalysis*. To the planter a clear understanding of them is essential; for it is in consequence of the molecular changes thus induced in the component elements of the sugar, that nearly all the evils which occur during the process of its manufacture arise.

I have stated that diastase is merely a modification of one of the compounds of proteine above named; that such is the case seems proved by its possessing a similar composition, and by the identity of their actions. We have seen that diastase has the power of converting starch into dextrine and glucose. If it be kept, while moist, in a warm place for a few days, it loses this property, but has acquired a new one, namely, of converting glucose into lactic acid. When kept for a still longer period, it acquires the properties of the common yeast, and induces in saccharine fluids the vinous fermentation. The albuminous principles of vegetables and animals produce the same effects under similar circumstances. They, moreover, produce others which I have not yet mentioned, but which it is highly impor-

tant should be known to the sugar-maker, and which are interesting as examples of the variety of changes induced by this class of actions.

If a solution of refined cane sugar in water be exposed for a few hours to a temperature approaching 200° , the cane sugar is converted into the sugar of fruits; if the experiment be continued, the solution acquires a dark color, and ultimately a dark brown powder falls, which does not possess sweetness; it is one of the substances which has been described as ulmine and ulmic acid. If glucose be similarly treated, but with the addition of a little lime, a similar precipitate, but of a still darker color, is quickly induced. It is a combination of glucic and melasinic acid with the lime. The lime has acted as an oxidising agent, and converted the glucose into glucic acid, with which it has immediately united, and by the prolonged action of this elevated temperature the glucic acid is converted into melasinic acid. The respective composition of these two bodies will enable us to understand the change which has been produced in the glucose. Glucic acid consists of carbon 8, hydrogen 5, oxygen 5; and melasinic acid of carbon 12, hydrogen 6, oxygen 5.

If a little gluten, obtained from wheat, be placed in contact with a solution of cane sugar, and the mixture be exposed to a moderately high temperature, it becomes viscid and mucilaginous; its sweetness disappears, and on examination gum will be found to have occupied the place of sugar.

If a little curd, or a piece of animal membrane, or a small portion of gluten which has been preserved for a short time, be added to a solution of cane sugar, the latter is converted into mannite or lactic acid.

If the above substances, or blood, or white of egg when the putrefactive decay has fairly commenced, be added to a solution similar to the above, the vinous fermentation will be established, the sugar, however, being previously converted into glucose by the action of these substances. It may be necessary to mention that, whenever this last named change is produced in saccharine liquids, it is invariably accompanied with the development of myriads of minute cryptogamic plants, each individual of which consists of a simple nucleated cell. They are endowed with great fecundity, and continually increase in number until the fermentation is at its height. How far their existence may be essential to the development of this change is a question which has latterly been much agitated, but which it is unnecessary for our purpose to discuss.

The term fermentation has not been confined to this last mentioned metamorphosis of saccharine substances, but has been applied equally to the others produced by the like class of causes. Thus the one in which the sugar is converted into gum, has received the appellation of the *viscous*, and that in which the same body is converted into lactic acid, has been denominated *the lactic acid fermentation*.

THE SALINE OR INORGANIC CONSTITUENTS OF PLANTS.

Although the great bulk of the solid parts of every vegetable is principally built up of organic substances, produced by the operations of the vital principle on the elements which have just been described, yet a small amount of inorganic matter is essential to the perfect structure of every plant.

When, from the application of heat, the organic constituents have been dissipated, the only remains of a plant are found in a small amount of ash. This ash constitutes the inorganic constituents which had entered into the structure of the plant during its life.

From numerous experiments that have been made upon the inorganic constituents of a great variety of vegetable bodies, the following conclusions have been arrived at. I quote the words of Professor Johnston:

"1. That on whatever soil a plant is grown, if it shoots up in a healthy manner and fairly ripens its seed, the quantity and quality of the ash is, generally speaking, nearly the same; and 2. That though grown on the same soil, the quantity and quality of the ash left by no two species of plants is the same; and that the ash differs more widely in these respects, the more remote the natural affinities of the several plants from which it may have been derived. Hence, there is no longer any doubt that the inorganic constituents contained in the ash are really essential parts of the substance of the plant, and that they cannot live a healthy life or perfect all their parts without them." We must likewise conclude, that the root by which these substances are absorbed, must possess the power of selecting those among them which are useful to the economy, and of rejecting others, which are either not necessary, or which might prove injurious. Such a conclusion, however, must be considerably qualified. It is true that of two substances dissolved in water some plants will take up one, and some the other; but there are other substances as highly poisonous to vegetables as their absorption into the system would prove to man or animals, which are taken up by the roots of most plants without any apparent difficulty. So that we cannot allow that vegetables possess these powers of selection, except under very considerable restrictions. Practice, indeed, has demonstrated, and also taken advantage of the knowledge, that some vegetables, at least, when placed under circumstances favorable to their performance of this function, absorb from the soil a quantity of the different kinds of saline matter more than sufficient for their support and nourishment.

The beet-root which has been cultivated in the highly manured grounds of the market-gardener, is very large, and its growth is vigorous; but it is useless to the sugar manufacturer, owing to the great amount of saline substances, particularly, as might be supposed, the nitrate of potash, which it contains.

Turnips which have been raised upon soils manured with the bi-phosphate of lime, always contain a larger amount of the phosphates

than those which have been grown on land less rich in these salts, and are consequently better fitted for the food of young animals.

The sugar-cane also absorbs with great readiness the chlorides of sodium and potassium, and probably the sulphates of these bases likewise. So that it is not uncommon to find the juice obtained from canes which have been grown on soils in which these salts are abundant, to possess very purgative qualities, in consequence of the presence of these substances in much larger quantities than usual. The chloride of sodium (common salt) forms a highly deliquescent compound when combined with sugar; which accounts for the difficulty that attends the conversion of cane juice that contains this salt even in moderate quantity, into sugar that will crystallise freely or "that will bear the sea."

These saline constituents are not equally diffused throughout all parts of the plant. In the sugar cane, for instance, they constitute four per cent. of the weight of the leaves, whereas in the stem their amount generally does not exceed 0.6 per 100.

I trust that I have rendered the foregoing sketch sufficiently intelligible to the reader to enable him, on a careful perusal of it, to understand the transformations which the non-azotised vegetable principles therein named, are liable to undergo from slight disturbing causes. It will be remembered that those changes were described as being molecular ones, or at most, that they were effected by the displacement or addition of an atom or two of water, or rather the elements necessary to form those atoms to the original substance; and that of all agents none more effectually produce them than the contact of one of the azotised principles which have been described. On a knowledge of these changes is based one of the most important principles that are to guide us in the manufacture of sugar.

Art. VII.—THE COTTON TRADE.

ADVANCES OF THE COTTON TRADE AND MANUFACTURE—HOME AND FOREIGN SUPPLIES—STOCKS—DEMANDS—PROSPECTS OF COMING CROP—PRICES, &c.

DURING the past half-century, cotton fabrics have been gradually coming into general use, and are now a staple in all the markets of the world. Consequently the result of the crop of the United States from year to year becomes a subject of anxiety, not merely to the growers at home, but to the mercantile and manufacturing interests of the world; for of the product of all cotton-growing countries combined, more than four-fifths is raised in the United States.

After the disastrous visitation of the caterpillar had reduced the estimated crop of 2,400,000 bales to 1,779,000 in 1846-7, there

were intelligent parties who expressed the belief that, at some future day, an entire crop or even series of crops, might be swept away in this manner, though I believe in this they rather "took counsel of their fears." Assuming it to be a fact that in some parts of the West Indies and Southern Mexico, (as is asserted,) the cotton plant, from the same cause, has nearly become extinct, we are not to infer as a sequence that the same will ever be the case in the United States. The difference of latitude is very great, and the experience of the past would seem to show, that a long continuance of warm and sultry weather is necessary to produce the caterpillar in great numbers, and that a *very late* crop is most liable to injury from them. In 1846 the crop was *late*, in addition to which the worms appeared *earlier than usual*, and consequently had a longer time to propagate and increase, before the recurrence of fall weather had any effect either on themselves or their favorite food.

Without supposing that entire crops can be cut off in the United States, we may not shut our eyes to the fact, that what has once transpired may occur again. It therefore becomes the duty of planters to look the danger in the face, and prepare to meet it. It is very possible that by better attention to scientific agriculture an earlier and surer stand of cotton may be obtained; but we do not believe that it is in the power of man to prevent, to any extent, the multiplication of the caterpillar, so long as they have green cotton to feed upon.

What, then, is the planter's remedy? A general limitation of the growth of cotton, united with an increased production at home of all the necessities of life—grain, beef, pork, mutton, and wool, and added to this, the manufacture of coarse negro clothing, and in many parts the boiling of molasses from cane grown on the spot.

Planters, as a body, must cease to be dependant on their credit for the means of raising their crops, and increasing beyond propriety their negro force. This course compels them to send their cotton to market often at an unfavorable period. It is true that a large portion of the crop is dependant on uncertain navigation for reaching the place of sale, but it is not the less true that many of the planters residing in those sections of the country do not control their own crops. They either pass through the hands of country merchants, or are consigned to factors who have a large claim on them for advances, and are consequently placed on the market without delay; while at the same time the markets are glutted by the supplies coming down with the simultaneous rising of the interior waters. Little or no pains are taken to keep back for the time that portion of the crop that may be sent forward at any moment.

Hitherto production has been greatly in advance of consumption, and consequently the aggregate value of the crop has been diminished materially. In whatever light we look at this over production, it is adverse to the interests of the planting community.

The aggregate number of bales raised in all countries for 5 years, commencing with the crop of 1842-3, was 12,868,000, while the consumption of the world, as far as ascertained, was only 12,615,000 bales for the same period, and which embraces the three small crops

of 1845-6-7. Thus the production exceeded consumption 253,000 bales; added to which, the stock on hand when the crop of 1842 came into market of 650,000, would make the stock on hand at all points, at the close of 1847, about 900,000 bales.

The annexed table exhibits the crops of the United States for 6 years (estimating 1847-8 at 2,260,000, with the average price in New-Orleans, through each season, from middling to fair qualities:

1842-'43	-	2,379,000 bales, average price in New-Orleans,	6½
1843-'44	-	2,030,500 "	8
1844-'45	-	2,394,500 "	6½
1845-'46	-	2,100,500 "	7½
1846-'47	-	1,778,600 "	10½
1847-'48	-	2,260,900 "	7½

Assuming, for the sake of illustration, that the above would exhibit the average value of the whole crop, and that the average bale weighs 425lbs., it will be seen that while the large crop of 1842-'43 realized \$56,873,000, the small crop of 1846-'47 brought \$78,320,000, showing the relative influence of excessive and short supply in the aggregate value of the crop.

To the deep indebtedness of the planting community is owing, in part, the extremely low price to which cotton went down at one period during the past spring in the New-Orleans market; and so great was the difficulty of realizing money even on cotton with so heavy a stock pressing on the market, without a corresponding demand abroad, that extensive shipments were made on very limited advances; and in turn the Liverpool market has undergone a similar pressure from the anxiety of holders to realize their advances on the shipments made at New-Orleans.

Let us look at the past history of the trade. In 1785 the first bale of cotton was imported into Liverpool, and for ten years thereafter the quantity consumed was very trifling. The following table will show the average imports per annum in periods of 5 years, of cotton wool from all countries into the port of Liverpool for 50 years, commencing with 1793:

1793 to 1797	- -	48,000	- - -]	1823 to 1827	- -	595,000
1798 to 1802	- -	76,500	- - -	1828 to 1832	- -	727,000
1803 to 1807	- -	168,000	- - -	1833 to 1837	- -	923,000
1808 to 1812	- -	200,000	- - -	1838 to 1842	- -	1,170,000
1813 to 1817	- -	237,000	- - -	1843 to 1847	- -	1,384,000
1818 to 1822	- -	423,000				

This shows a steadily progressive increase, which, however, cannot continue in the same ratio hereafter, though it is highly probable that many years cannot elapse ere the production will be met by consumption. Nothing will tend more to bring about this than the permanent settlement of European governments on a liberal basis.

Great Britain has hitherto been the main seat of cotton manufactures, but continental Europe and the United States are rapidly coming in for their full share, and must ere long take the supremacy out of her hands.

The consumption of France during the past five years has not varied materially, averaging about 330,000 bales per annum. In the United States during the same period it has increased from 325,000 bales in 1843 to 425,000 in 1847. It must be borne in mind, however, that a large amount of cotton is manufactured in the Southern and Western States that never reaches any seaport, and consequently, does not enter into the tables of either consumption or supply. Though the tables of the current year may probably show that 450,000 bales have been spun up in this country, yet the actual amount will no doubt exceed half a million. It is stated that the mills west of the Alleghany mountains and above the mouth of the Ohio receiving their supply by the latter stream, will consume this year, 40,000 bales. A large part of this is purchased in Nashville, Memphis, Louisville and Cincinnati. The writer is acquainted with a respectable gentleman who purchases largely for mills in Pennsylvania, who formerly bought in New-Orleans, but who has this year operated chiefly in Memphis, and who expects to do so hereafter.

In Germany there is a rapid advance going on in the extension of cotton manufactures. The imports into the Zoll Verein were double as great in 1845 as in 1841, of raw cotton, while the importations of twist from Great Britain during the same period increased in nearly as great a ratio. Instead of importing English twist, ere long the raw material from the United States will take its place, and the twist be made at home.

In the Austrian port of Trieste, the imports of raw cotton of all countries for five years ending with 1835, was 358,000 bales, of which 51,000 were American; in five years ending with 1845, the total imports were 494,000, of which 189,000 were American. Genoa is now a powerful competitor with Trieste for the cotton trade of Northern Italy.

The production of other countries than the United States averaged, for several years, 470,000 bales; in 1845-'46 it was only 375,000, and last year was not supposed to exceed 400,000. Presuming this last to be the fact, the following tables show the production and consumption of the world for five years, the quantity taken into use on the continent of Europe in 1847 being estimated at 630,000.

PRODUCTION.

	1842-3.	1843-4.	1844-5.	1845-6.	1846-7.
United States, ...	2,379,000	2,030,500	2,394,500	2,100,500	1,778,600
Other countries, . . .	470,000	470,000	470,000	375,000	400,000
	2,849,000	2,500,500	2,864,500	2,475,500	2,178,600

CONSUMPTION.

	1843.	1844.	1845.	1846.	1847.
Great Britain, ...	1,383,000	1,406,000	1,580,000	1,593,000	1,158,000
Con. of Europe, . . .	743,000	686,000	775,000	750,000	630,000
United States, ...	325,000	347,000	389,000	422,000	428,000
	2,451,000	2,439,000	2,744,000	2,765,000	2,216,000

It is a fact of some importance, though not generally known, that
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the quantity of cotton wool imported into Great Britain from other sources than the United States, is not equal to the amount manufactured and sent back to the same countries in cotton fabrics, while the quantity received in other parts of Europe, excepting from the United States, is very limited, all the East India cotton going either to England or China. Indeed, shipments of cotton have already been made from hence to China. The idea of raising cotton advantageously in India for English consumption, has lately been declared futile by a Committee of the House of Commons; and there is no fear of the growth of any other country coming in competition with that of the United States, until prices shall have become permanently very much higher than at present.

The following exhibits the crops of 10 years, estimating that of 1847-'8 at 2,260,000, showing the relative supply of the Atlantic states compared with the South-Western, and also the increase of the last 5 years over the preceding to have been a fraction under 12½ per cent. on the Atlantic side, and a little over 15 per cent. at New-Orleans and Mobile. It is manifest that the greatest increase hereafter must be west of the Mississippi river; and it is to be hoped that the government will take efficient measures to improve the unceasingly interrupted navigation of Red River and its numerous tributaries.

	1839-39.	1839-40.	1840-41.	1841-42.	1842-43.	1843-44.	1844-45.	1845-46.	1846-47.	1847-48.
N. Orleans..	575,000	859,700	814,700	727,700	1,068,000	822,200	929,100	1,084,100	714,300	1,188,000
Mobile.....	251,700	446,700	320,700	818,300	481,700	468,000	517,300	423,000	323,300	440,000
	826,700	1,306,400	1,135,400	1,546,000	1,549,700	1,290,200	1,446,400	1,507,100	1,037,600	1,628,000
Florida.....	75,300	136,300	93,500	114,400	161,100	145,800	188,700	141,300	127,900	150,000
Georgia.....	305,100	327,700	149,000	223,500	229,500	263,600	286,400	195,900	245,800	228,500
S. Carolina..	210,300	313,300	227,400	268,200	251,600	304,900	324,400	251,400	350,300	254,000
N. Car & Virg.	33,400	33,300	28,700	28,200	49,100	25,100	37,700	25,900	59,100	15,000
	523,900	775,300	498,600	635,800	636,300	729,300	648,200	613,500	741,200	635,000
Total Crop..	1,350,600	2,179,700	1,634,000	2,181,800	2,186,000	1,990,400	2,094,600	2,098,600	1,778,800	2,263,000

☞ The Texas receipts are appended to those of New Orleans.

When the current commercial year opened, the prospects as regarded the cotton market were encouraging. It was well-known that the stocks of manufactured goods were very light; the harvests both in Great Britain and on the continent of Europe, had proved abundant, and under the influence of the great reduction in the value of bread-stuffs, it was hoped that the demand for cotton goods would be so extensive as to keep up the price of the raw material, even should the crop prove a large one. Middling cottons opened at 10½ in the New-Orleans market, gradually settling down to 9 c. towards the latter end of October. At this period, the numerous failures in Europe, arising out of losses in grain speculations; chiefly exposing the rottenness of mercantile houses hitherto considered in good standing, with the heavy demand for money to meet railway calls, began to tell heavily on the cotton trade; and prices declined at all points, while the general distrust made exchange negotiations very difficult.

These causes continued to operate, pressing down prices, till at one time in November, middling cottons were sold under 6 c. Fortunately, we were relieved by a better demand than usual for

France and the continent of Europe, and towards spring we were beginning to hope for a better state of things, the wreck having been pretty well cleared away in the mercantile world, when the French Revolution threw Europe into convulsions again, most completely upsetting commercial affairs. This was followed by similar commotions in different parts of Continental Europe, and then by popular outbreaks in Ireland, England, and Scotland. The result has been, that for want of demand, for manufactured goods, cotton has gone down in Liverpool to a point almost as low as it ever before touched; and the quotations in the New-Orleans market on the 16th July, were for middling $5\frac{1}{4}$ a $5\frac{5}{8}$; fair 7 a $7\frac{1}{4}$ c.

The stocks are nearly on an average at all points about the same as last year, and business every where dull; a little improvement was, however, manifested in France lately.

The consumption of cotton (as shown by advices up to 16th June of this year) in Great Britain, from 1st January to 16th June inst., was 582,790 bales, against 504,660 for the same period in 1847; though this exhibits some improvement over last year, yet there is no elasticity in the market, and little is manufactured for which there is not an immediate demand.

Any opinions expressed at this time as regards the future would be futile. The most critical period for the growing crop has yet to be passed, and we cannot look for high prices until the European governments shall have settled down upon some permanent basis; any important improvement must first be looked for from this quarter, and consequently every succeeding packet is expected with unusual anxiety.

IMPROVED HUSBANDRY, IMPLEMENTS, &c.

THERE has been within a year or two back established in New-Orleans, an Agricultural Warehouse, more complete than any other in the Southern country, and equal to the best in the Northern States. This establishment is in the charge of R. L. Allen, brother of the Editor of the *American Agriculturist*. One is surprised on examination to discover how numerous and ingenious are the conveniences for assisting the labors of man in his natural and necessary duty of tilling the earth and working its products. We took a few notes during some occasional visits to the establishment, and present them to the reader.

Plows.—Of these the variety is so great as to preclude a description of each kind. From a draught requiring four to six horses, in heavy ground, to a plow easily drawn by one horse or mule, the intermediate styles afford a wide scope for selection. Many are of iron, composed of an admixture of several kinds, which produces a metal of great strength and durability, increasing at least one hundred per cent. more service in those parts so soon worn out in other plows. Of 195 premiums offered by agricultural societies in Massachusetts, New-York and Vermont, for the best plows, the manufacturers of the class to which we refer obtained 158 as the reward to their skill. We noticed the Side Hill or Swivel Plows, of which are five different sizes, so constructed that the mould-board can be instantly changed from one side to the other, which enables the operator to perform the work horizontally upon side hills, going back and forth on the same side, and turning all the furrow-slices with great accuracy, downward.

There are four sizes of the *Sub-soil Plow*, to be used immediately after the team which turns up the surface-soil, and in the same furrow. This is of great advantage to the crops, both in dry and wet land. In the former, the sub-soil being deeply broken up and well pulverized, the moisture is retained much longer than it otherwise would be, and the roots of plants can descend much lower and wider

for their food; while in the latter, the excess of moisture filters below, and is readily carried off. This plow will break and pulverize the soil any required depth to eighteen inches.

The *Three-Share Plow* spreads two feet six inches wide, and is used for plowing in wheat, rye, and other grain, after sowing; and taking so many furrows at a time, it gets over the ground very rapidly. It is also highly useful as a cultivator, doing the work of three small plows with the same force.

The *Paring Plow* is used for paring turf-lands, preparatory to burning. The share is thin and flat, made of wrought iron, steel edged. It has a lock-coulter in the centre, and short coulters on the outside edge of each wing of the share, cutting the turf, as it moves along, into two strips about one foot wide, and as deep as may be required.

Mr. Allen having made himself acquainted with southern soils, and the best modes of culture, has constructed a series of plows expressly for this region, combining the advantages of the best northern models, without being so cumbersome. In addition to those specified, he has various other plows suited to every locality in North and South America, and the West India Islands, among which are steel points and shares, steel and wrought iron mould-boards, and every species of castings for plantation or farming labor.

CULTIVATORS.—Of these are several varieties. The Cultivator is a great labor-saving implement for stirring the earth between the rows of corn and other crops. It is well adapted for mixing manures in the soil, and pulverizing it after plowing. It leaves the soil much lighter, and in better condition to receive the seed than when the harrow only is used. It is useful for covering grain broadcast, and buries it at a more suitable and uniform depth than the plow, and in one fourth the time; and much more perfectly than the harrow. There are various forms of teeth, some enter and stir the soil deep; others are broad and flat, to skim the surface and cut up the weeds; others narrow, acting as scarifiers,—and all fit the same size and form of mortice. The farmer, by purchasing different forms of teeth, can use them in the same frame-work. The *Universal Cultivator*, which may be easily repaired by blacksmiths, is made to expand from two to five feet.

Langdon's Cultivator is, in reality, a plow with a light, wide, flat share, sharp at the edges, and coulters on the mould-board. It is used for running between the rows of different crops, to cut up the weeds and loosen the soil. It is also an excellent implement for digging potatoes. The shares can be detached and wings added, which converts it into a double mould-board plow. It is recommended only for light soils free from stones.

The *Cotton Sweep Cultivator* is made expressly to take the place of the cotton sweep, besides doing much additional work. It has very sharp teeth so arranged as to cut up all grass and weeds, at the same time finely pulverizing the soil; and can be expanded or contracted to suit any width of row. It works so lightly that one mule can draw it.

The *Hand Cultivator* is made entirely of iron, except the handle, and expands from ten to eighteen inches. It is a very useful implement in garden culture, and is often used in fields. It cuts up and leaves the weeds exposed, and stirs the earth thoroughly. The operator, with his hands behind him, clenches the cross handle, and walks easily forward between the rows, and performs the work better and faster than several men with hoes, leaving the ground well pulverized and the weeds destroyed. This being expeditious, it can often be used to advantage.

ROLLERS.—These implements are fast coming into general use. They crush all sods and lumps that remain on the top of the ground after the harrow has passed, and force down small stones level with the surface. They render the field smooth for the cradle, scythe and rake, press the earth close about the seeds, and secure a more certain and quick germination. Their greatest benefits are realized when used on such light, sandy and porous soils as are not sufficiently compact to hold the roots of plants firmly, and retain suitable moisture. On such lands they are invaluable, and in all cases their use has greatly increased the product. Much benefit is undoubtedly found in compressing the surface of such soils by preventing the escape of those gases from the manure, so essential to vegetation, and which are so rapidly extracted by the sun and winds. The rollers in highest estimation are made of iron, 18 or 24 inches in diameter, in separate sections, each one foot long, placed on a wrought iron arbor, on which they turn independently of each other;—thus turning without much friction and leaving the ground smooth. They are generally used with three to six sections. If four or

ly are required, shafts may be substituted for the tongue, and drawn by one horse, or both may be used alternately according to the team. The box is attached to receive stones, etc., picked up on the field, and giving weight to the roller as the work may require.

HARROWS.—Of these are many kinds and sizes, from the one horse up to the large four horse harrows. The *Triangular Folding, Scotch and Geddies* are most approved. The latter, in two triangles, is superior to the square, as it draws from one point with a regular, not a straggling motion, and of course is easier for the team. Either part is easily lifted when in motion, to let off any trash that may have collected among the teeth.

Sufficient attention is not paid to harrowing. It is the next most important operation after plowing. The harrow should run from four to six inches deep, cutting up all the lumps, and leaving the ground in a finely pulverized state.

SEED-SOWERS, &c.—These machines are quite ingenious and labor-saving in their contrivance. The *Improved Brush* has been long in use in this country and in England, and is found to be the only one that plants all the variously formed small seeds rapidly and with precision. It is easily arranged to plant a greater or less quantity as may be required.

Backelder's Corn-Planter deposits the seed at any distance in drills or otherwise, from a hopper above the beam; and as the horse moves along, the share below opens the furrow; arms moving horizontally drop the corn through a tube conducting it to the bottom of the drill. A triangular iron follows to remove all lumps and stones, and a roller to compress the earth over the seed. The machine requires a small horse to draw it, and with a boy to drive, will plant from ten to twelve acres per day, according to the width of the rows.

The *Horse-Drill* will plant wheat, rye, Indian corn, oats, peas, beans, ruta-bagas, &c., and can be regulated to drop any required quantity on an acre. The drills can be thrown in or out of gear separately, so as to plant a field of any shape without seeding any part twice. They are so arranged as to operate equally well on all kinds of land, hilly and rough, as well as level and smooth. A man with two horses can put in from 10 to 12 acres with wheat in a day; and with one horse he can plant 20 acres with corn per day.

COTTON SEED PLANTER.—Both the corn-planter and horse-drill above described are easily adapted to sowing cotton seed, and can be made to do the work of six or eight hands, and much more perfectly.

HARVESTING IMPLEMENTS, &c.—The *Reaping Machine* can reap fifteen acres of wheat in a day, and will cut the grain as smooth and clean as can be done with a sickle or scythe. It has low wheels, drawn by a pair of horses, and cuts a swath five feet wide, with twenty knives, working horizontally, which require sharpening only once a day. A man sitting on the side of the platform with a rake pushes off the grain as fast as it is cut. A field of oats or barley may be cut as neatly and expeditiously as one of wheat or rye.

Railway Horse Power and Thrasher is adapted to one horse, which, with the aid of two men and a boy, can thrash at the rate of 75 to 100 bushels of wheat, or 100 to 150 bushels of oats in a day.

The Grain Cradle, Grass, Lawn, Bramble, or Bush Scythes are implements which admirably answer the purposes intended. They are the most approved in the market, and are made of the best cast and German double-refined steel.

The *Revolving Hay Rake*, with a horse, man and boy, will clean from 15 to 20 acres per day. It can be used to good advantage, even on rough ground.

Rice Thrashers, Fanning Mills, Corn Shellers, Smut Machines, Corn and Cob Crushers, Burr Stone Mills, Rice Hullers, Straw Cutters, Machines for raising water by horse power, &c. We enumerate, at random, a few more of the articles or inventions found in the warehouse of Mr. Allen.

Egg Hatching Machine is constructed of tin or other materials, with the brooding-chamber surrounded by water, warmed to a suitable degree of temperature by a spirit-lamp, which may be constantly kept burning for less than ten cents a day. The apparatus is so simple in its construction and management, that a child can superintend its operation, with two hours' time in a day, and requires no attention during the night, after ten o'clock. It is made of three different sizes, to contain from 200 to 600 eggs at once.

The variety of corn mills in this establishment exceeds any we have before seen, from the little hand steel mill, and such as combine hand and horse power, to the largest sizes of the best French burr stone. Also, corn-shellers equally various,—

there being more than a dozen kinds to shell by hand, and four to shell by horse or steam power, some of the latter being capable of turning out 1500 bushels per day. To these may be added straw cutters of twelve or fifteen styles, working in all kinds of ways, by hand and horse power, yet all efficient in lessening the mastication of the animal, and thereby increasing the value of the fodder, whether corn stalks or shucks, straw or hay.

The large furnace kettle, which is always set and ready for use, in doors or out, is of great convenience and utility, economizing fuel and labor. These are of all sizes.

Having referred to the corn and cob-crushers, we may remark, that it is a vast labor saving machine for the stomach of the animal, and in connexion with the straw-cutter, is capable of saving at least one third of the food, while it augments the working capabilities of the beast. The food must be reduced, ground or divided, before it can be acted upon by the gastric juices of the stomach, and assimilated to the system. Now, a great deal of this may be accomplished by these machines, and to much more advantage than by mastication; and when the animal has received his rations in this prepared form, he more readily digests them, and is sooner refreshed and invigorated for his work.

The Water Ram, a modification of the invention of Montgolfier in the last century, for raising water to any required height, with a fall not exceeding three feet, we conceive to be an instrument of great value for various purposes. We noticed pumps and engines of several descriptions, adapted to almost every conceivable use, all of which are the best suited to some one or more peculiar situations or objects. Also, a variety of Hoes, of domestic manufacture, far superior to any ever imported, and which Mr. Allen informed us, he had made especially for such discriminating planters as can appreciate an article which will pay for itself by extra service in every week's use. They are made, not only in an improved form, but of a fine quality of metal, and will do work much better, faster, and with much more ease to the hand than the common hoe.

The garden implements and tools for shubbery form a beautiful collection. Many are delicate and ingenious, fit for the hands of a lady, uniting amusement with healthful exercise. Spades, shovels, scythes, forks, and every other instrument needed in rural occupations, may be had at Mr. Allen's warehouse.

But we cannot further particularize. We have accomplished our object, and what we deem a duty to our agricultural readers, by calling their attention to the first establishment of this kind ever undertaken south or west of Baltimore, and one probably more varied and complete than can be found elsewhere in the United States. When we reflect that nearly all the agricultural improvements of the present day consist in the superiority of the implements, and the economy and perfection of labor thereby secured; we cannot too earnestly recommend the adoption of such implements as are most likely to attain this result.

That policy is best which brings most reward with less sacrifice to the operator. Of late, the mechanic arts have wonderfully multiplied the comforts and reduced the labor of man. Prejudice against anything new, because it happens to excel old models, is no longer tolerated by the intelligent. There is the same reason why the best tools should be used in producing from the soil, as that the carpenter or other handicraftsman should employ instruments adapted to the work he has to accomplish. We shall conclude our remarks on this subject by a quotation which we consider eminently applicable:

"Furius Cresinus, an emancipated Roman slave, having obtained from his very small estate much larger crops than his more wealthy neighbors from their vast domains, they became so envious that they charged him with employing enchantment to attract into his grounds the produce of their fields. Having been summoned by Spurius Albinus, and being fearful of condemnation, he introduced into the forum, as the tribunes prepared to vote, his robust and well clad family, and his agricultural implements,—his heavy mattocks, his ingeniously constructed plows, and his well-fed oxen, and then exclaimed,—Behold! Roman citizens, my magic; but I am still unable to show you, or to bring into the market place my *studies*, my constant *vigilance*, my fatiguing *labor*. Scarcely had he concluded, when he was absorbed by public acclamation.

"It is in enterprise, study, unremitting study, vigilance and industry, more than in *money*, that the mystery of great crops and successful husbandry consists."

To succeed in this "enchantment" of full crops, let parties within reach of New Orleans call on Mr. Allen, who will cheerfully assist them in the work. His collection cannot fail to interest any visitor,—producing new and enlarged ideas, with increased love of nature. Such is the tendency of all associations connected with rural life.

UNITED STATES COMMERCE AND NAVIGATION.

EXPORTS AND IMPORTS, 1847.

From the late report of the Register of the Treasury, showing the export of articles produced in the United States, we compile a table embracing cotton, rice, flour, Indian corn and meal, sugar and tobacco, in value, and also the total amount of all the exports of domestic produce from July 1, 1846, to June 30, 1847.

	Cotton.	Rice.	Flour.	Corn and Meal	Sugar.	Tobacco.	Tot. Exp.
1. Russia	\$523,616	39,305	17	.....	.....	49,305	628,322
2. Prussia .....	.....	43,430	.....	.....	.....	.....	182,252
3. Sweden and Norway..	300,277	90,161	3,390	.....	.....	30,151	391,847
4. Swedish W. Indies..	.....	2,278	45,312	12,935	297	6,287	110,062
5. Denmark	62,609	115,525	731	.....	.....	210	198,132
6. Danish W. Indies..	.....	10,481	284,784	199,631	3,326	15,851	836,072
7. Hanse Towns	1,069,095	424,550	51,039	639	.....	1,502,655	4,068,413
8. Hanover .....	.....	.....	.....	.....	.....	8,469	8,469
9. Holland	195,108	46,598	99,039	1,748	.....	661,696	1,865,398
10. Dutch E. Indies..	.....	.....	5,931	.....	.....	69	91,962
11. Dutch W. Indies..	.....	5,378	63,006	12,193	89	15,971	217,216
12. Dutch Guiana .....	.....	1,956	2,725	.....	.....	1,297	43,840
13. Belgium	1,003,519	140,099	306,697	16,994	.....	183,112	2,874,367
14. England	34,519,231	1,145,135	11,933,723	8,055,149	1,146	2,558,008	70,232,777
15. Scotland	1,277,719	46,390	915,130	382,894	.....	112,008	3,445,460
16. Ireland	44,329	30,707	2,255,721	8,685,396	.....	578	12,297,698
17. Gibraltar	6,716	2,620	146,217	2,877	336	144,240	365,260
18. Malta .....	.....	.....	700	.....	.....	11,169	25,096
19. British E. Indies..	.....	.....	15,847	.....	1,164	27,982	287,783
20. Cape of Good Hope..	.....	.....	22,705	.....	505	27,307	106,172
21. Mauritius .....	.....	.....	4,140	.....	.....	2,887	36,275
22. Australia .....	.....	.....	.....	196	.....	11,466	33,599
23. Honduras .....	.....	8,868	68,773	2,408	1,424	2,886	261,378
24. British Guiana .....	.....	19,036	232,637	48,284	.....	9,148	691,903
25. British W. Indies..	7,729	94,553	1,457,552	456,078	847	56,850	3,973,252
26. British Am. Colonies..	17,996	67,017	1,452,926	249,776	22,947	208,229	5,819,667
27. France on the Atlantic	9,837,465	570,952	3,412,522	26,461	.....	663,508	17,420,385
28. France on Mediterra'n.	443,833	1,918	252,484	967	.....	222,730	1,172,146
29. French African Ports.	.....	157	1,126	.....	.....	4,963	5,491
30. Bourbon .....	.....	.....	15,236	300	.....	52,537	52,537
31. French W. Indies..	284	19,983	180,611	26,307	462	52,164	569,186
32. French Guiana .....	.....	1,947	10,060	465	.....	3,888	55,267
33. Spain on the Atlantic.	311,704	419	459	1,565	.....	363,961	770,748
34. Spain on Mediterra'n.	1,014,929	.....	.....	.....	.....	98,372	1,186,340
35. Teneriffe and oth. Canaries	.....	124	449	294	.....	99	15,148
36. Manila and Philippine Islands	.....	.....	130	.....	.....	.....	32,480
37. Cuba	303,351	647,377	206,654	399,441	.....	15,255	6,005,617
38. Oth. Span. W. Indies.	.....	33,427	103,549	57,078	.....	20,095	525,079
39. Portugal .....	.....	1,771	11,175	.....	.....	.....	56,593
40. Madeira .....	.....	5,153	31,072	25,921	.....	9,612	105,031
41. Fayal and oth. Azores.	.....	151	2,270	.....	.....	330	9,466
42. Cape de Verd Islands.	.....	787	12,602	.....	2,350	8,656	71,084
43. Italy	750,567	.....	12,177	.....	.....	227,621	1,056,028
44. Sardinia	414,931	.....	10,100	.....	.....	194,795	630,323
45. Sicily	28,978	.....	.....	.....	.....	.....	56,699
46. Trieste and other Austrian Ports.	1,117,159	.....	380	.....	.....	.....	1,175,385
47. Turkey, Levant, &c..	.....	.....	180	.....	.....	178	61,570
48. Hayti .....	.....	22,901	239,966	5,648	19,898	39,068	1,187,017
49. Mexico .....	.....	653	29,837	.....	627	9,545	209,641
50. Cent'l Repub. of Am.	.....	.....	3,150	1,250	763	1,947	73,328
51. New Granada .....	.....	150	12,019	362	.....	90	53,635
52. Venezuela .....	.....	7,316	210,197	14,069	49	16,372	571,474
53. Brazil .....	.....	96	1,562,979	194	.....	52,279	2,566,938
54. Cisalpine .....	.....	6,339	88,917	329	3,056	6,810	180,536
55. Argentine Republic..	.....	4,611	53,723	.....	4,334	299	123,954
56. Chili	33,067	10,462	32,411	324	74,164	5,185	1,461,347
57. Peru .....	.....	.....	8,414	.....	.....	111	192,978
58. Ecuador .....	.....	.....	5,340	.....	313	.....	27,253
59. China .....	.....	.....	10,668	80	373	9,787	2,708,655
60. W. Indies generally..	.....	2,026	27,752	8,036	.....	1,438	11,8137
61. E. America generally.	.....	1,701	10,567	.....	3,236	57	44,427
62. Asia generally .....	.....	.....	336	.....	2,727	1,136	161,876
63. Africa generally .....	.....	1,361	124,164	510	4,254	144,351	700,421
64. E. Sea & Pacific Ocean	41,391	1,161	5,670	.....	2,680	5,671	310,187

53,415,849 3,005,696 26,133,611 12,694,546 150,367 7,901,056 150,210,694
 Gov't Stores to the Army, from New-York. 150,210,694
 150,210,694

The report shows \$14,395,212 of Indian corn, and \$4,301,334 of Indian corn meal exported, both which items we have added together in the same column.

To save room, we have also included brown and refined sugars under the same head; of brown, the value exported was \$25,483, and of refined, \$124,824. Tobacco, leaf, \$7,242,086—manufactured, \$658,950, likewise added together.

FOREIGN EXPORTS.

The Register also furnishes a statement of goods, wares, and merchandise, of the growth, produce, and manufacture of foreign countries, exported from the United States from July 1, 1846, to June 30, 1847, with the amount entitled to drawback, amount not entitled to drawback, amount from ware-houses, and the aggregate value. The following is condensed.

	Free.	Ad valorem.	Specific.	Total.
Entitled to drawback.....	.....	\$2,224,343	\$909,754	\$3,134,147
Not entitled to drawback.....	\$3,657,251	434,247	38,812	4,130,310
From ware-houses.....	.....	698,744	97,544	796,288
	\$3,657,251	\$3,357,384	\$1,046,110	\$8,060,745

FOREIGN IMPORTS.

Two separate tables of goods, wares, and merchandise imported into the United States from July 1, 1846, are prepared in the report, one embracing five months to 30th November, when the tariff of 1842 expired, and the other seven months, thence to June 30, 1847. We have arranged the table below, showing the total value of imports within the first period, and that under the tariff of 1846 within the second period.

	5 months, 1846.	7 months, ad v.	Free.	Total 7 mos.
1 Russia.....	\$561,878	\$360,379	\$2,416	\$362,795
2 Prussia.....	7,608	.....	.....	.....
3 Sweden and Norway...	291,154	322,451	93	322,544
4 Danish West Indies...	184,248	569,378	93,122	662,509
5 Hanse Towns.....	1,557,922	2,662,572	1,691	2,064,263
6 Holland.....	376,576	592,638	278,000	870,633
7 Dutch East Indies.....	590,364	79,073	225,445	304,618
8 Dutch West Indies....	195,354	161,075	12,609	173,684
9 Dutch Guiana.....	17,542	39,843	1,970	41,813
10 Belgium.....	314,289	600,126	33,910	634,036
11 England.....	15,578,727	29,715,312	19,876,385	49,591,647
12 Scotland.....	345,472	1,421,230	70,312	1,491,542
13 Ireland.....	27,922	479,431	82,887	562,318
14 Gibraltar.....	8,060	18,909	.....	18,909
15 British East Indies....	663,570	917,057	65,830	982,887
16 Cape of Good Hope...	20,871	15,145	25	15,170
17 British Honduras.....	63,596	65,305	68,334	133,636
18 British Guiana.....	3,875	2,225	13,025	15,250
19 British West Indies...	349,824	308,319	289,789	598,108
20 British American col...	955,926	732,131	656,870	1,388,001
21 France on the Atlant...	10,172,159	12,280,246	1,446,671	13,726,917
22 France on the Medit...	472,187	529,243	335	529,578
23 French West Indies...	60,571	26,839	64,156	90,795
24 Miquelon & F. fisheries	162	273	.....	273
25 French Guiana.....	6,596	33,779	7,400	41,179
26 Spain on the Atlantic..	152,138	92,960	29,610	122,570
27 Spain on the Medit...	397,897	499,738	118,916	618,654
28 Teneriffe and Canaries.	44,503	17,361	.....	17,361
29 Manilla & Phil. Islands	65,215	396,695	32,146	428,841
30 Cuba.....	2,837,693	8,928,237	628,937	9,557,174
31 Other Span. W. Indies	269,416	1,841,644	30,869	1,872,513
32 Portugal.....	277,777	3,181	2,372	5,553
33 Madeira.....	95,097	760	.....	760
34 Fayal.....	19,964	3,950	10,650	14,600
35 Cape de Verdes.....	120	79	2,200	2,279
36 Italy.....	415,221	846,897	17,818	864,715

	5 months, 1846.	7 months ad. v.	Free.	Total 7 mos.
37 Sicily	\$170,894	378,409	1,685	380,094
38 Trieste	98,040	80,867	8,434	89,301
39 Turkey	306,758	268,690	2,262	270,952
40 Hayti	421,029	171,071	799,480	970,551
41 Mexico	265,069	267,189	274,560	481,749
42 Cen. Rep. of America.	65,900	12,096	2,585	14,681
43 New Grenada	69,885	47,997	38,772	86,769
44 Venezuela	504,116	218,206	600,174	818,380
45 Brazil	2,740,167	877,447	3,478,546	4,355,993
46 Cisalpine Republic ..	29,965	81,039	1,806	82,845
47 Argentine Republic ..	104,199	137,010	....	137,010
48 Chili	487,702	989,578	239,623	1,229,201
49 Peru	316,854	68,052	11,317	79,369
50 China	1,722,354	1,059,364	2,801,624	3,860,989
51 Asia generally	70,637	228,253	5,591	237,844
52 Africa generally	288,223	233,959	87,960	321,619
53 S. Seas and P. Ocean ..	40,824	3,764	....	3,764
54 Sandwich Islands .....	....	21,039	....	21,039
55 S. America generally ..	....	....	10,500	10,500
56 Denmark .....	....	475	....	475
57 Bardinia .....	....	287	....	287
	\$44,964,180	\$69,049,068	\$32,532,460	\$101,581,528
Add 5 months of 1846				\$44,964,180

Total imports of year ending June 30, 1847

\$146,545,708

VESSELS BUILT IN UNITED STATES, 1815 to 1847.

Years.	Ships.	Brigs.	Schooners.	Sloops and canal b'rs.	Steamers.	Total vessels built.	Tot. ton'g.
1815	136	224	680	274	—	1,314	154,624
1816	76	122	781	424	—	1,403	131,666
1817	34	86	559	394	—	1,073	86,393
1818	53	85	428	332	—	898	82,421
1819	53	82	473	242	—	850	79,817
1820	21	60	301	152	—	534	47,784
1821	43	89	248	127	—	507	55,856
1822	64	131	260	168	—	623	75,346
1823	55	127	260	165	15	622	75,007
1824	56	156	377	166	26	781	90,939
1825	56	197	538	168	35	994	114,997
1826	71	187	482	227	45	1,012	126,438
1827	58	133	464	241	38	934	104,342
1828	73	108	474	196	33	884	98,375
1829	44	68	485	145	43	785	77,098
1830	25	56	403	116	37	637	58,094
1831	72	95	416	94	34	711	85,962
1832	132	143	568	122	100	1,065	144,539
1833	144	169	625	185	65	1,188	161,626
1834	98	94	497	180	68	937	118,330
1835	25	50	302	100	30	507	46,238
1836	93	65	444	164	124	890	113,627
1837	67	72	507	168	135	949	122,987
1838	66	79	510	153	90	898	113,135
1839	83	89	439	122	125	658	120,988
1840	97	109	378	224	64	872	118,309
1841	114	101	312	157	78	762	118,893
1842	116	91	273	404	137	1,021	129,083
1843	58	34	138	173	79	482	63,617
1844	73	47	204	279	163	766	103,531
1845	124	87	322	342	163	1,038	147,012
1846	100	164	576	355	225	1,420	182,202
1847	151	168	689	392	198	1,598	242,732

* For 9 months.

STATEMENT EXHIBITING THE COMMERCE AND NAVIGATION OF EACH STATE AND TERRITORY FOR THE YEAR ENDING ON THE 30TH DAY OF JUNE, 1847.

State.	Domestic Produce.			Value of Exports.			Total American Produce.			Value of Imports.		
	In Vessels.	In Foreign Vessels.	Total.	In Vessels.	In Foreign Vessels.	Total.	In Vessels.	In Foreign Vessels.	Total.	In Vessels.	In Foreign Vessels.	Total.
1 Maine.....	\$1,453,809	\$160,262	\$1,614,071	\$4,755	\$15,377	\$20,132	\$1,634,203	\$445,745	\$128,311	\$574,056		
2 New-Hampshire.....	.....	1,407	1,407	.....	283	283	1,690	13,150	3,785	16,935		
3 Vermont.....	231,985	.....	231,985	282,313	.....	282,313	514,298	239,641	.....	239,641		
4 Massachusetts.....	7,942,656	1,320,121	9,262,777	1,534,580	451,105	1,985,685	11,248,462	18,189,328	16,287,777	34,477,008		
5 Rhode Island.....	191,434	838	192,272	935	.....	935	192,369	301,075	4,414	305,489		
6 Connecticut.....	563,848	34,854	598,702	490	.....	490	599,192	271,870	3,953	275,823		
7 New-York.....	32,513,500	12,309,980	44,816,480	3,577,741	1,450,117	5,027,858	49,844,368	71,084,398	13,082,954	84,167,352		
8 New-Jersey.....	18,428	.....	18,428	.....	700	700	19,128	4,066	771	4,837		
9 Pennsylvania.....	6,146,513	2,116,798	8,263,311	273,466	7,614	281,080	8,544,391	8,843,773	743,743	9,587,516		
10 Delaware.....	185,013	50,446	235,459	.....	.....	.....	235,459	12,452	270	12,722		
11 Maryland.....	6,796,076	2,836,284	9,632,360	94,589	35,345	129,934	9,762,244	3,928,643	503,671	14,332,514		
12 District of Columbia.....	108,894	15,375	124,269	.....	.....	.....	124,269	25,049	.....	129,318		
13 Virginia.....	3,499,110	2,146,558	5,645,668	10,740	1,966	12,706	5,658,374	333,091	53,036	386,127		
14 North Carolina.....	261,949	28,970	290,919	.....	.....	.....	290,919	136,483	5,901	142,384		
15 South Carolina.....	6,058,387	4,369,759	10,428,146	475	2,896	3,371	10,431,517	1,901,911	378,747	1,580,658		
16 Georgia.....	2,050,360	6,661,789	8,712,149	.....	.....	.....	8,712,149	59,666	207,180	267,180		
17 Florida.....	722,821	1,085,356	1,808,177	1,900	461	2,361	1,810,538	103,180	40,118	143,298		
18 Alabama.....	3,197,209	5,857,371	9,054,580	.....	.....	.....	9,054,580	80,492	309,669	390,161		
19 Louisiana.....	25,609,818	16,178,465	41,788,303	193,904	70,126	263,330	42,051,633	7,437,995	1,784,974	9,992,969		
20 Mississippi.....	.....	.....	.....	.....	.....	.....	.....	81	235	316		
21 Tennessee.....	.....	.....	.....	.....	.....	.....	.....	1,256	.....	1,256		
22 Missouri.....	.....	.....	.....	.....	.....	.....	.....	167,195	.....	167,195		
23 Ohio.....	203,102	575,842	778,944	.....	.....	.....	778,944	88,381	2,300	90,681		
24 Kentucky.....	.....	.....	.....	.....	.....	.....	.....	26,956	.....	26,956		
25 Michigan.....	47,008	46,697	93,705	.....	.....	.....	93,795	37,369	234	37,603		
26 Illinois.....	40,100	12,060	52,160	.....	.....	.....	52,100	266	.....	266		
27 Texas.....	.....	.....	.....	.....	.....	.....	.....	20,087	9,739	29,826		
Total.....	\$97,841,272	\$2,796,192	\$100,637,464	\$5,975,138	\$2,036,020	\$8,011,158	\$108,648,622	\$113,141,357	\$3,404,281	\$146,545,638		

SUMMARY STATEMENT OF THE VALUE OF THE EXPORTS OF THE GROWTH, PRODUCE, AND MANUFACTURE OF THE UNITED STATES, DURING THE YEAR COMMENCING ON THE 1ST DAY OF JULY, 1846, AND ENDING ON THE 30TH DAY OF JUNE, 1847.

THE SEA.		
Fisheries—		
Dried fish, or cod fisheries.....	\$659,629	.....
Pickled fish, or river fisheries, (her- ring, shad, salmon, mackerel.)....	136,221	.....
Whale and other fish oil.....	1,070,659	.....
Spermaceti oil.....	738,456	.....
Whalebone.....	671,601	.....
Spermaceti candles.....	191,467	.....
		\$3,468,083
THE FOREST.		
Skins and furs.....	747,145	.....
Ginseng.....	64,466	.....
Products of wood—		
Staves, shingles, boards, hewn timb.	\$1,849,911	.....
Other lumber.....	342,781	.....
Masts and spars.....	23,270	.....
Oak bark and other dye.....	95,355	.....
All manufactures of wood.....	1,495,924	.....
Naval stores, tar, pitch, rosin, & turp.	759,221	.....
Ashes, pot and pearl.....	618,000	.....
	5,184,462	.....
		5,996,073
AGRICULTURE.		
Products of animals—		
Beef, tallow, hides, horned cattle...	2,434,003	.....
Butter and cheese.....	1,741,770	.....
Pork, (pickled,) bacon, lard, live hogs	6,630,842	.....
Horses and mules.....	277,359	.....
Sheep.....	29,100	.....
Vegetable food—		
Wheat.....	6,049,350	.....
Flour.....	26,133,811	.....
Indian corn.....	14,395,212	.....
Indian meal.....	4,301,334	.....
Rye meal.....	225,502	.....
Rye, oats, and small grain and pulse.	1,600,962	.....
Biscuit, or shipbread.....	556,266	.....
Potatoes.....	109,062	.....
Apples.....	92,961	.....
Rice.....	3,605,896	.....
	57,070,356	.....
		68,183,436
Tobacco.....	.....	7,242,086
Cotton.....	.....	53,415,848
Wool.....	.....	89,460
All other agricultural products—		
Flaxseed.....	1,346	.....
Hops.....	150,654	.....
Brown sugar.....	25,483	.....
Indigo.....	10	.....
		177,493
MANUFACTURES.		
Soap and tallow candles.....	606,798	.....
Leather boots and shoes.....	243,816	.....

Household furniture.....	225,700	.....
Coaches and other carriages.....	75,369	.....
Hats.....	59,536	.....
Saddlery.....	13,102	.....
Wax.....	161,527	.....
Spirits from grain.....	67,781	.....
Beer, ale, porter, and cider.....	68,114	.....
Snuff and tobacco.....	658,950	.....
Linseed oil and spirits of turpentine.....	498,110	.....
Cordage.....	27,054	.....
Iron—pig, bar, and nails.....	168,817	.....
castings.....	68,889	.....
all manufactures of.....	929,778	.....
Spirits from molasses.....	293,609	.....
Sugar, refined.....	124,824	.....
Chocolate.....	1,653	.....
Gunpowder.....	88,397	.....
Copper and brass.....	64,980	.....
Medicinal drugs.....	165,793	.....
Cotton, piece goods—		4,612,597
printed and colored.....	281,320	.....
white.....	3,845,902	.....
nankeen.....	8,794	.....
twist, yarn, and thread.....	108,132	.....
all other manufactures of.....	338,375	.....
Flax and hemp—		4,082,523
cloth and thread.....	477	.....
bags and all manufactures of.....	5,305	.....
Wearing apparel.....	47,101	.....
Combs and buttons.....	17,026	.....
Brushes.....	2,967	.....
Billiard tables and apparatus.....	615	.....
Umbrellas and parasols.....	2,150	.....
Leather and morocco skins not sold per lb.....	29,856	.....
Fire engines and apparatus.....	3,443	.....
Printing presses and type.....	17,431	.....
Musical instruments.....	16,997	.....
Books and maps.....	44,751	.....
Paper and stationery.....	88,731	.....
Paints and varnish.....	54,115	.....
Vinegar.....	9,526	.....
Earthen and stone ware.....	4,758	.....
Manufactures of glass.....	71,155	.....
tin.....	6,363	.....
pewter and lead.....	13,694	.....
marble and stone.....	11,220	.....
gold and silver & go. leaf.....	4,268	.....
Gold and silver coin.....	62,620	.....
Artificial flowers and jewelry.....	3,126	.....
Molasses.....	26,959	.....
Trunks.....	5,270	.....
Brick and lime.....	17,623	.....
Domestic salt.....	42,333	.....
		4,692,403
Lead.....	.....	124,981
Articles not enumerated—		
Manufactured.....	1,108,984	.....
Other articles.....	1,199,276	.....
		2,308,260
Government stores to the army, from N. Y. ....	.....	326,800
		150,637,464

IMPORTS OF SUGAR.

In reply to a resolution of the Senate, the Treasury Department has reported the quantity and value of sugar imported into the United States from 1844 to 1847, inclusive. The qualities are stated as brown, white clayed, loaf and other refined. We give a table, showing the value of brown sugar, and the aggregate of the others, each year:

Whence Imported.	1844.	1845.	1846.	1847.
1 Cuba.....	\$4,243,292...	2,253,345...	2,812,419...	6,809,811
2 Porto Rico.....	1,893,005...	1,358,288...	1,565,217...	1,609,262
3 Danish West Indies.....	216,441...	409,005...	361,168...	377,994
4 British West Indies.....	24,791...	29,802...	26,347...	79,900
5 French West Indies.....	17,028...	2,138...	2,427...	1,377
6 Dutch West Indies.....	6,639...	4,412...	1,178...	6,539
7 Swedish West Indies.....	508...	3,282...	569...	—
8 Dutch East Indies.....	34,778...	10,323...	58,642...	—
9 Manilla and Phil. Islands...	204,936...	160,551...	266,306...	128,727
10 Brazil.....	121,487...	293,009...	250,897...	298,777
11 England.....	4,716...	—	—	—
12 Venezuela.....	21,261...	6,506...	569...	20,044
13 Texas.....	—	95...	—	—
14 Mexico.....	4,192...	545...	—	7,201
15 China.....	—	25,079...	1,421...	4,651
16 Other places.....	466...	12...	50...	938
	6,793,540...	4,556,392...	5,348,082...	9,344,721
Loaf and refined sugar, &c....	403,158...	224,163...	19,175...	532,491
Total.....	\$7,196,698...	4,780,555...	5,367,257...	9,877,212

TONNAGE &c., U. S. TRADE, JULY 1846—47.

	American tonnage.			Foreign tonnage.		
	Crews.	For. trade.	Dom. trade.	Crews.	U. S. trade.	Tot. ton.
1 New York.....	54,056	1,086,744	750,951	30,944	537,458	2,375,153
2 Massachusetts.....	1,368	291,410	568,513	8,641	129,404	989,327
3 Louisiana.....	8,624	233,839	213,537	6,684	170,059	573,957
4 Pennsylvania.....	4,412	102,053	182,996	1,833	38,338	313,449
5 Maryland.....	3,520	82,089	139,119	1,685	40,966	262,184
6 Vermont.....	4,551	69,044	2,560	—	—	71,604
7 Maine.....	2,099	50,156	384,167	4,027	69,483	503,806
8 South Carolina.....	1,282	38,974	27,017	1,561	36,261	102,252
9 Connecticut.....	1,910	29,073	102,888	71	1,366	133,327
10 Virginia.....	691	21,677	73,491	1,738	39,045	134,122
11 Rhode Island.....	1,102	21,149	48,018	134	2,330	71,497
12 North Carolina.....	960	20,850	24,488	150	2,840	48,179
13 Alabama.....	609	16,596	18,030	1,568	43,162	77,388
14 Florida.....	534	11,256	12,559	833	10,204	34,019
15 Georgia.....	390	9,553	21,023	1,391	39,049	69,625
16 Ohio.....	289	5,962	50,779	476	10,273	67,014
17 Texas.....	223	5,119	2,487	479	7,868	15,474
18 New Hampshire... ..	71	2,141	20,426	148	2,268	24,838
19 Illinois.....	72	1,858	3,251	17	350	5,459
20 Delaware.....	30	639	14,761	26	738	16,138
21 New Jersey.....	23	613	83,644	93	2,850	86,307
22 District of Columbia	28	516	23,457	—	—	23,971
23 Michigan.....	4	35	28,452	17	36,793	65,262
24 Mississippi.....	—	—	391	—	—	391
25 Missouri.....	—	—	31,635	—	—	31,635
26 Kentucky.....	—	—	10,388	—	—	10,338
27 Tennessee.....	—	—	2,707	—	—	2,707
	99,345	2,101,359	2,839,045	64,364	1,220,346	6,160,750

In the above table, the States are arranged in the order of their foreign trade, in American bottoms.

TONNAGE UNITED STATES, 1815 TO 1847.

Years.	Registered tonnage.	Enrolled and licensed tonnage.	Total tonnage.	Regist'd tonnage in the whale fishery.	Proportion of the enrolled and licensed tonnage employed in the			
					Coasting trade.	Cod fish'y.	Mack'el fish'y.	Whale fish'y.
1815...	854,294	513,833	1,368,127	—	435,066	26,570	—	1,229
1816...	800,759	571,458	1,372,218	—	479,979	37,879	—	1,168
1817...	809,724	590,186	1,399,912	4,874	181,457	53,990	—	349
1818...	606,088	619,095	1,225,184	16,134	503,140	58,551	—	614
1819...	612,930	647,821	1,260,751	31,700	523,556	65,044	—	686
1820...	619,047	661,118	1,280,166	35,391	539,080	60,842	—	1,033
1821...	619,896	679,062	1,298,958	26,070	559,435	51,351	—	1,924
1822...	622,150	696,548	1,324,699	45,449	573,080	58,405	—	3,133
1823...	659,920	696,644	1,356,565	39,918	566,408	67,620	—	585
1824...	669,972	719,190	1,389,163	33,165	589,223	68,419	—	180
1825...	700,787	722,323	1,423,110	35,379	587,273	70,626	—	—
1826...	737,978	796,211	1,534,189	41,757	666,420	63,767	—	226
1827...	747,170	873,437	1,620,607	45,653	732,937	74,048	—	338
1828...	812,619	928,772	1,741,391	45,621	758,922	74,947	—	180
1829...	650,142	610,654	1,260,797	56,284	508,858	101,796	—	—
1830...	576,675	615,311	1,191,776	38,911	516,978	61,554	35,973	792
1831...	620,451	647,394	1,267,846	82,315	539,723	60,977	46,210	481
1832...	686,969	752,460	1,439,450	72,868	649,627	54,027	47,427	377
1833...	750,126	856,123	1,606,149	101,158	744,198	62,720	48,725	478
1834...	857,438	901,469	1,758,907	108,060	783,618	56,403	61,082	364
1835...	885,821	939,118	1,824,940	97,640	792,301	72,374	64,443	—
1836...	897,774	984,328	1,882,102	144,680	873,023	63,307	64,424	1,573
1837...	810,447	1,086,338	1,896,685	127,241	956,930	80,551	46,810	1,894
1838...	822,591	1,173,047	1,995,639	119,629	1,041,105	70,064	56,649	5,229
1839...	834,244	1,262,234	2,096,478	131,845	1,153,551	72,558	35,983	439
1840...	899,764	1,280,999	2,180,764	136,926	1,176,694	70,035	28,269	—
1841...	945,803	1,184,940	2,130,744	157,405	1,107,067	66,551	11,321	—
1842...	975,358	1,117,031	2,092,390	151,612	1,045,753	54,804	16,096	377
1843...	1,009,305	1,149,297	2,158,601	152,374	1,076,155	61,224	11,775	142
1844...	1,068,764	1,211,330	2,280,095	168,293	1,109,614	85,224	16,170	320
1845...	1,095,171	1,321,829	2,417,002	190,695	1,190,898	69,825	21,413	206
1846...	1,130,288	1,431,798	2,562,084	186,980	1,289,870	72,516	36,463	439
1847...	1,241,312	1,597,732	2,839,095	193,858	1,452,623	70,177	31,481	—

NOTE.—No separate returns of tonnage employed in the mackerel fishery was made by the collectors of the customs prior to the year 1830.

VESSELS BUILT IN UNITED STATES JULY 1846-7.

States.	Ships.	Brigs.	Sch'rs.	Sloops & canal b'ts.	Steam'rs.	Tot. ves. built.	Total tonnage.
Maine.....	73	120	151	1	1	346	63,548
New-Hampshire.....	7	1	2	—	—	10	5,288
Vermont.....	—	—	1	2	—	3	135
Massachusetts.....	33	13	84	5	3	138	27,769
Rhode Island.....	3	2	3	1	1	10	2,110
Connecticut.....	3	—	30	8	1	42	6,027
New-York.....	17	5	88	138	23	271	50,994
New-Jersey.....	—	—	70	26	5	101	9,830
Pennsylvania.....	8	2	31	121	66	228	24,126
Delaware.....	—	—	17	6	2	25	2,279
Maryland.....	5	17	108	—	1	131	12,691
District of Columbia.....	—	1	2	19	—	22	801
Virginia.....	—	—	25	—	2	27	1,524
North Carolina.....	1	—	27	6	—	34	2,384
South Carolina.....	—	—	3	—	—	3	161
Georgia.....	—	—	—	1	—	1	25
Ohio.....	1	6	29	10	37	83	18,191
Missouri.....	—	—	1	43	16	60	6,073
Tennessee.....	—	—	—	—	1	1	167
Kentucky.....	—	—	1	—	30	31	5,424
Louisiana.....	—	—	9	1	2	12	493
Florida.....	—	—	—	—	2	2	387
Michigan.....	—	1	7	4	5	17	3,293
Alabama.....	—	—	—	—	—	—	—
Total.....	151	168	689	392	198	1,592	243,732

STATEMENT OF COTTON IN FRANCE FROM 1ST JAN. TO 30TH JUNE.

Imports.	1846.	1847.	1846.
United States.....	216,481.....	160,690.....	212,530
Brazil.....	657.....	1,959.....	739
Egypt.....	1,538.....	12,078.....	1,121
Other descriptions.....	5,568.....	13,637.....	7,039
	224,239.....	188,384.....	221,429
Stock 1st January.....	62,800.....	30,000.....	69,000
	287,039.....	218,384.....	290,429
Deliveries, 6 months.....	139,939.....	136,684.....	200,329
Stock—			
United States.....	129,700.....	73,200.....	83,100
Brazil.....	2,000.....	500.....	200
Egypt.....	8,800.....	4,700.....	5,900
Other ports.....	7,500.....	3,300.....	990
Total, June 30.....	148,000.....	81,700.....	90,100

ARMISTICE.—CESSATION OF HOSTILITIES BETWEEN GERMANY AND DENMARK.

An armistice of three months has been arranged between Germany and Denmark on the following conditions:

- 1.—The Swedes to withdraw from the Danish territory.
- 2.—The Germans to withdraw from that part of the Duchy of Schleswig-Holstein called Schleswig.
- 3.—Schleswig to remain neutral ground.
- 4.—The blockade by the Danes of German ports to be raised immediately.
- 5.—The vessels captured by the Danes to be released, after settlement of the amount of contribution levied on Jutland by the Prussian army.

Official despatches from Denmark are said to be forwarded to Lord Palmerston, by the steamer conveying this intelligence, confirming the news.—*Hamburg Borsenalle, July 4.*

AGRICULTURAL STATISTICS.

1.—FOREIGN CONSUMPTION OF GRAIN.

THE estimate of the Commissioner of Patents, showing a surplus of 40,000,000 bushels of wheat, and 173,000,000 of corn, out of the crop of the United States in 1847, provokes inquiry for the markets to which it may be forwarded. Suppose wheat to be worth seventy-five cents, and corn forty cents at the producer's barns, we have \$30,000,000 for the one, and \$70,000,000 for the other, making the joint sum of \$100,000,000 for these two articles of production, for which there is no demand at home. What shall be done with it? Where can purchasers be found? are questions that naturally arise in every mind; and the best answer at our command, is a statement, exhibiting the quantity of wheat, (exclusive of other grain,) required by the principal corn purchasing countries of the world.

Great Britain.....	20,000,000 bushels.
France.....	5,000,000 "
West Indies, generally.....	2,500,000 "
British American Colonies.....	2,250,000 "
North America, generally.....	350,000 "
South America, generally.....	1,900,000 "
Holland.....	1,000,000 "
Total.....	33,000,000 bushels.

During the last two years, as stated in late parliamentary proceedings, the importation and cost of grain to Great Britain were as follows:

Grain imported, 1846.....	4,770,000 quarters.
" " 1847.....	10,840,000 "
Paid for grain, June, 1846, to January, 1847.....	£5,139,000
" " January to July, 1847.....	14,184,000
" " July to October, 1847.....	14,260,000
Cost, in fifteen months.....	£33,583,000

Of course, the table specifying a demand for only 33,000,000 bushels, is predicated on fair harvests in the respective countries needing a supply. Thus, Great Britain, with average crops, falls short 20,000,000 bushels; but in 1846-7, owing to the potato blight, her necessity amounted to 14,610,000 quarters, equivalent to 116,880,000 bushels, for which she paid \$150,000,000 to foreigners. What portion of this sum was taken by the agriculture of the United States, has been officially ascertained for the year ending June 30, 1848:

Articles exported.	To Great Britain.	To other countries.	Total.
Flour.....	\$15,104,574.....	\$11,029,237.....	\$26,133,811
Indian Corn.....	13,760,310.....	634,902.....	14,395,212
Wheat.....	3,526,392.....	2,522,958.....	6,049,350
Indian Meal.....	3,362,982.....	938,352.....	4,301,334
Rice.....	1,222,332.....	2,383,664.....	3,605,996
Other small grain.....	631,902.....	969,060.....	1,600,962
Biscuit, or Ship Bread.....	164,322.....	391,944.....	556,266
Rye Meal.....	34,977.....	190,525.....	225,502
Potatoes.....	2,827.....	106,235.....	109,062
Total Grain.....	\$37,810,518.....	\$19,166,877.....	\$56,977,395
Pork, Bacon and Lard.....	3,471,597.....	3,159,245.....	6,630,842
Beef.....	1,269,975.....	1,164,028.....	2,434,003
Butter and Cheese.....	1,209,277.....	532,493.....	1,741,770
Mutton.....	.....	29,100.....	29,100
Total Provisions.....	\$43,761,367.....	\$24,051,743.....	\$67,813,110

Whatever the quantity on hand, or the price, it cannot be presumed that the exportation from the United States will equal the above in many years to come, if, indeed, it reach half way. Another famine in Europe could alone produce such extremity—an infliction which no hope of profit to American granary owners would solicit. Except the United States, the countries from which Great Britain could be supplied, are the following:

Russia on the Black Sea.....	16,000,000 bushels.
Russia on the Danube.....	12,000,000 "
Russia, northern ports.....	4,000,000 "
Egypt and Syria.....	4,000,000 "
Prussian, Pomeranian and Danish ports on the Baltic.....	1,600,000 "
	37,600,000 bushels.

Competition for the British market being an object with the producing world,

we annex a table, showing the average prices of wheat per bushel, delivered in England, from the principal corn marts of Europe. The estimate includes the cost of production, freight, &c., exclusive of duties.

	Bushels.	Cost in England.
St. Petersburg, Russia.....	1,540,000.....	\$1 32
Riga, Russia.....	.....	1 64
Liebau, Russia.....	240,000.....	1 46
Odessa, Russia.....	1,200,000.....	1 09
Warsaw, Poland.....	2,400,000.....	1 20
Stockholm, Sweden.....	8,000.....	1 18
Dantzic, Prussia.....	3,520,000.....	1 32
Konigsberg, Prussia.....	520,000.....	1 44
Stettin, Prussia.....	2,000,000.....	1 34
Memel, Prussia.....	47,712.....	1 19
Elsinore, Denmark.....	1,400,000.....	1 13
Hamburg, Germany.....	4,304,000.....	1 34
Rouerdam, Holland.....	.....	1 73
Antwerp, Belgium.....	.....	1 77
Palermo, Sicily.....	1,600,000.....	1 40
Average.....	1,779,712.....	\$1 38

The cost of growing wheat and Indian corn in a portion of the United States is stated below, for which our readers are indebted to the Commissioner of Patents:

	Wheat.	Corn.
	\$1 10 per bushel.....	\$0 50 per bushel.
New-Hampshire.....	64 ".....	30 "
New-York, western.....	40 ".....	17 "
Pennsylvania.....	50 ".....	20 "
Ohio, northern.....	40 ".....	18 "
Michigan.....	30 ".....	—
Indiana.....	— ".....	37 "
Connecticut.....	— ".....	—

With more or less variation, as expenses may happen, the following will show the cost of a barrel of flour delivered at Liverpool from any part of the United States. Wheat is supposed to be worth sixty-four cents per bushel at Rochester mills, N. Y., from whence the calculation is made:

Five bushels of wheat, 64 cents, first cost.....	\$3 20
Grinding and bolting.....	30
Barrel.....	33
Freight to Albany.....	56
Freight and charges from Albany to New-York.....	12
Freight from New-York to Liverpool, (average).....	39
Insurance, Wharfage, &c.....	25

\$5 15

Divided by five, this sum shows the cost of wheat in Liverpool when exported in the form of flour, to be \$1 63 per bushel, against the general average of \$1 38 from European countries, as exhibited in a preceding table, a result quite encouraging to the farming interest of the United States.

2.—PORK BUSINESS OF THE WEST.

The immense surplus grain of the Western States is converted into animal food, which supplies most of the Union, besides a large amount to foreign countries. From the Patent Office Report for 1847, we gather the items below:

HOGS PACKED AT CINCINNATI, 1833—1847.

Year.	No. of Hogs.	Price.	Year.	No. of Hogs.	Price.
1833.....	85,000.....	.....	1841.....	160,000.....	3½ a 3½
1834.....	123,000.....	.....	1842.....	220,000.....	2 a 2½
1835.....	162,000.....	.....	1843.....	250,000.....	1½ a 2
1836.....	123,000.....	6 a 6½	1844.....	240,000.....	2½ a 2½
1837.....	103,000.....	6 a 7	1845.....	213,000.....	2½ a 2 7-10
1838.....	182,000.....	3½ a 4	1846.....	287,000.....	4 a 4½
1839.....	199,000.....	5½ a 6	1847.....	250,000.....	2 7-10 a 2 8-10
1840.....	95,000.....	3 a 3½			

ENTIRE PACKING IN THE WEST, 1844—1846.

	1844.	1845.	1846.
Missouri.....	16,000.....	31,700.....	70,898
Tennessee.....	16,000.....	1,500.....	42,975
Kentucky.....	91,000.....	83,800.....	215,125
Illinois.....	136,709.....	67,964.....	68,120
Indiana.....	257,414.....	147,420.....	251,236
Ohio.....	560,748.....	445,538.....	420,833
Minor points.....	1,200.....	8,850.....	18,675
Total.....	1,079,071.....	786,772.....	1,087,868

The estimate on 420,000 hogs, supposed to be packed at Cincinnati, in 1847-8, of 200 pounds each, gives the following distribution:

150,000 barrels pork.....	1,875,000 pounds star candles.
21,000,000 pounds bacon.....	5,200,000 " bar soap.
13,800,000 " No. 1 lard.....	7,300,000 " fancy and soft soaps.
1,000,000 gallons lard oil.....	50,000 " prussiate of potash.

The entire carcase weight of the lot, when dressed, is computed thus:

150,000 barrels pork—196 pounds net.....	29,400,000 lbs.
Bacon.....	21,000,000 "
Number one, or leaf lard.....	13,800,000 "
Lard or grease run into lard oil, stearine and soap oleine.....	5,000,000 "
Inferior grease for soap.....	1,000,000 "
Evaporation, shrinkage, waste, cracklings and offal for manure.....	13,800,000 "

84,000,000 lbs.

The process of preparing lard at Cincinnati, is thus noticed in the Report:—

"One establishment, besides putting up hams, etc., extensively, is engaged in extracting the grease from the rest of the hog. This will probably, the present year, operate upon thirty thousand hogs. It has seven large circular tanks—six of capacity to hold each fifteen thousand pounds, and one to hold six thousand pounds—all gross. These receive the entire carcasses, with the exception of the hams, and the mass is subjected to steam process under a pressure of seventy pounds to the square-inch, the effect of which operation is to reduce the whole to one consistence, and every bone to powder. The fat is drawn off by cocks, and the residuum, a more earthy substance, so far as made use of, is taken away for manure. Besides the hogs which reach this factory in entire carcasses, the great mass of heads, ribs, back bones, tail pieces, feet, and other trimmings of the hogs, cut up at different pork houses, are subjected to the same process, in order to extract every particle of grease. This concern alone will turn out this season three millions six hundred thousand pounds lard, five-sixths of which is No. 1. Nothing can surpass the purity and beauty of this lard, which is refined as well as made under steam processes."

Bristle dressing employs one hundred hands, and the sale, chiefly in Atlantic markets, brings about \$55,000 annually. The blood of the hogs is manufactured into Prussian blue, and parts of other offal into prussiate of potash, which is extensively used in the print factories of New-England, for coloring purposes.

PRICE OF PORK IN NEW-YORK, 1823—1847.

Year.	Mess.	Pickled.	Year.	Mess.	Pickled.
1823.....	\$13 31	\$9 78	1836.....	\$23 13	\$17 65
1824.....	13 78	10 32	1837.....	21 66	15 99
1825.....	13 83	10 22	1838.....	21 97	16 59
1826.....	11 55	7 84	1839.....	19 32	15 72
1827.....	13 21	8 62	1840.....	15 07	12 96
1828.....	13 71	10 06	1841.....	11 36	9 48
1829.....	12 79	10 24	1842.....	9 27	7 23
1830.....	13 64	9 87	1843.....	10 32	9 59
1831.....	14 30	11 13	1844.....	9 28	7 39
1832.....	13 77	11 22	1845.....	12 13	9 51
1833.....	14 97	11 53	1846.....	10 50	8 78
1834.....	14 29	10 21	1847.....	15 00	12 58
1835.....	16 96	13 08			

AGRICULTURAL STATISTICS:

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EXPORTS OF PORK, 1831—1846.

Year.	Barrels.	Year.	Barrels.	Year.	Barrels.
1831.....	51,263	1837.....	24,583	1842.....	180,039
1832.....	83,025	1838.....	31,336	1843.....	80,310
1833.....	105,840	1839.....	41,301	1844.....	162,689
1834.....	83,961	1840.....	66,281	1845.....	161,609
1835.....	61,827	1841.....	132,390	1846.....	190,422
1836.....	22,540				

3.—GRAIN CROP OF UNITED STATES, 1847.

As a basis, the Patent Report takes the census returns of 1840, and adds 22 per cent. for increase of production, by which the following summary is attained, in bushels:

Varieties.	Whole quantity raised.	Used for Seed.	Remaining.
Indian Corn.....	539,350,000	6,000,000	533,350,000
Wheat.....	114,245,500	11,424,550	102,820,950
Rye.....	29,222,700	3,652,587	25,570,113
Buckwheat.....	11,673,500	723,343	10,950,157
	694,491,700	21,804,480	672,691,220

Corn for animal feed, is stated by estimation as follows:

	Bushels.
Consumed by 5,299,516 horses, at 5 bushels per head.....	26,447,580
“ “ 18,265,344 neat cattle, at 1 bushel per head.....	18,265,344
“ “ 25,000,000 sheep, at $\frac{1}{4}$ “ “.....	6,250,000
“ “ 35,000,000 swine, at 5 “ “.....	175,000,000
“ “ Poultry.....	5,000,000
	230,963,096

To ascertain the surplus remaining for exportation, the Report furnishes a statement, condensed from tables, at length:

Wheat.	Bushels.	Surplus.
Quantity produced in 1847.....	114,245,500	
“ used for seed.....	11,424,550	
“ consumed.....	62,239,200	
	73,663,750	40,581,750
Indian Corn.		
Quantity produced in 1847.....	539,350,000	
“ used for seed.....	6,000,000	
“ consumed by men.....	103,732,000	
“ consumed by animals.....	230,963,096	
“ used for distilling, &c.....	25,000,000	
	365,695,096	173,654,904
Rye.		
Quantity produced in 1847.....	29,222,700	
“ used for seed.....	3,652,587	
“ consumption estimated.....	10,373,200	
“ used for distilling, &c.....	10,000,000	
	24,325,787	5,296,913

<i>Bushels.</i>	<i>Bushels.</i>	<i>Surplus.</i>
Quantity produced in 1847.....	11,673,500	
“ used for seed.....	723,343	
“ consumed.....	6,000,000	
	6,723,343	4,950,935
Total surplus for exportation to foreign countries.....		224,384,502

The crop of oats, for 1847, is estimated at 167,867,000 bushels.

“ “ barley “ “	5,649,950	“
“ “ beans and peas “ “	50,000,000	“
“ “ potatoes “ “	100,950,000	“
“ “ rice “ “	103,640,590 lbs.	

4.—IMPORTANT ANALYSIS OF CROPS.

To the Farmer's Library, edited by J. S. SKINNER, Esq., New-York, we are indebted for the following table from Johnston's Lectures, exhibiting the average produce of nutritive matter of different kinds from an acre of the usually cultivated crops.

	Gross Produce.		Husk, or	Starch,	Sugar, &c.		Gluten, &c.	Oil or Fat.	Saline
	<i>bush.</i>	<i>lbs.</i>	<i>lbs.</i>	<i>lbs.</i>	<i>lbs.</i>	<i>lbs.</i>	<i>lbs.</i>	<i>lbs.</i>	<i>lbs.</i>
Wheat.....	25..	1,500....	225	825	150 to 260...	30 to 60	..	30	
“	30..	1,800....	270	990	180 to 340...	36 to 72	..	36	
Barley.....	35..	1,800....	270	1,080	210 to 260...	35 to 54	..	50	
“	40..	2,100....	315	1,260	250 to 310...	42 to 63	..	60	
Oats.....	40..	1,700....	340	1,000	230 to 320...	60 to 120	..	70	
“	50..	2,100....	420	1,054	290 to 400...	76 to 150	..	80	
Rye.....	25..	1,300....	130 to 260...	780	130 to 260...	40 to 50	..	26	
“	30..	1,600....	160 to 320...	960	230 to 350...	48 to 65	..	32	
Indian Corn.....	30..	1,800....	100	1,260	216	90 to 170	..	27	
Buckwheat.....	30..	1,300....	320	650	100?	5?	..	21	
Beans.....	25..	1,600....	160	640	380 to 450...	32 to 49	..	48	
“	30..	1,900....	190	760	450 to 530...	38 to 57	..	57	
Peas.....	25..	1,600....	130	800	380	34	..	48	
<i>Tons.</i>									
Potatoes.....	6..	13,500....	540	2,400	270	45	..	120	
“	12..	27,000....	1,080	4,800	540	90	..	240	
Turnips.....	20..	45,000....	900	4,000	670	130	..	300	
“	30..	67,000....	1,340	6,000	1,000	200	..	450	
Carrots.....	25..	56,000....	1,680	5,600	840	200	..	800	
Mangel-Wurzel.....	20..	45,000....	900	4,950	900	?	..	450	
Meadow Hay.....	14..	3,400....	1,020	1,360	240	70 to 170	..	220	
Clover Hay.....	2..	4,500....	11,20	1,800	420	135 to 225	..	400	
Pea Straw.....	..	2,700....	675	1,200	330	40	..	135	
Wheat Straw.....	..	3,000....	1,500	900	40	60 to 100	..	150	
“	..	3,600....	1,800	1,080	48	70 to 120	..	180	
Oat Straw.....	..	2,700....	1,210	950	36	?	..	135	
“	..	3,500....	1,570	1,200	48	?	..	175	
Barley Straw.....	..	2,100....	1,050	630	28	?	..	105	
“	..	2,500....	1,250	750	33	?	..	125	
Rye Straw.....	..	4,000....	1,800	1,500	53	?	..	160	
“	..	4,800....	2,200	1,800	64	?	..	200	

The value of this table, in practice, is mainly in the feeding of stock, where the quantity acquired for nutrition can be thrown out, and waste avoided. Sugar, gluten and oil, the highly nourishing properties of grain, are shown by the analysis.

5.—GOVERNOR MC DUFFIE'S COTTON PLANTATION.

A writer, in Augusta, has lately had an opportunity of inspecting the valuable estate of this noble Carolinian, in Abbeville, S. C. He speaks of it as a model in every respect.

"The plantation was commenced in 1821, with about three hundred acres; has been enlarged at various times to the capacity of 5,000 acres; situated in the flat woods of Abbeville District, six miles from the Savannah river. The number of negroes on the plantation is 175; of these many are employed at indoor occupations, leaving 102 field workers, many of whom are small, having but recently left the nursery, and a number of them women, who occupy much of their time in attending to their children, so that the effective force of the plantation numbers 70 task hands. The number of mules 24. I found that this force had prepared and cultivated with great ease 750 acres of cotton, 325 of corn, 10 of peas, potatoes and squashes, 100 of wheat, and 300 of oats. The cotton was thinned to a stand to one stalk in a place; it was perfectly clean, and was the largest and most beautiful I had seen this year. The corn was particularly fine, and promised to yield from 25 to 30 bushels per acre: the wheat 10 bushels, and the oats 15 per acre, and the cotton 1000 lbs. per acre. These estimates were made by neighbors who are acquainted with the mode of culture, and who know that a greater yield than this had been obtained under the administration of a former overseer, a Mr. Brooks. The buildings, fences and gates were in fine order, and the whole crop in as fine a state of cultivation as the garden of an horticulturist who prides in his profession. The mules were fat, and the entire stock of sheep, cattle and hogs looked well. Here is a plantation cultivating over 15 acres of plow and hoe crop to the hand, and over 21 acres to the hand inclusive of small grain, and over 61 acres to the horse; what plantation can equal this? Yet the entire crop clean, even and beautiful, and the condition of the land so perfectly fine and pulverized that, as was said by a great planter in the neighborhood, it could not be improved except by the process of running it through a sieve. The whole secret of the success of Gov. McDuffie, as a planter, consists in his method of preparation, manuring and cultivation.

"The following plan is adopted for cotton: if the ground to be prepared for cotton had been in cotton the previous year, the first operation is to pull up the stalks and lay them in the middle, between the rows; a hand then walks backwards and draws in the soil, leaves, and trash from the ridges, with the hoe, upon the stalks that have been pulled up and deposited in the row, and on which he walks. This operation is called listing in. The task for a hand is half an acre per day. After all is listed in, the turning shovel throws a furrow on each side which entirely hides the stalks and trash listed in; this is the first use of the plow and two furrows fire made: two more furrows, run in like manner, just before planting, finishes the preparation, so far as the plow is concerned; the hoe then draws up from between the rows all the loose dirt. Thus twice passing over with the hoe and four furrows of the plow makes a perfect preparation for planting on a ridge well manured with stalks and cotton trash, and whatever of weeds and grass that may be on the land. But if the ground to be prepared for cotton had been in corn or grain, or fallow, the same process exactly is observed, only that one or more furrow of the plow is required, and that is a rooter or broad shovel to lay off the rows into which the stalks, grass or stubble are drawn to become manure for the cotton bed or ridge. When the period for planting arrives, the hands are divided into three classes: 1st, The best hands, embracing those of good judgment and quick motion. 2d, Those of the weakest and most inefficient class. 3d, The second class of hoe hands.

"Thus classified, the first class will run ahead and open a small hole about seven to ten inches apart, into which the 2d class drop from four to five cotton seed, and the third class follow and cover with a rake. You have visited this farm and can testify to the goodness of the stand of cotton, and to the regular and exact distance of the stalks from each other. The hoe is never permitted to pass between the cotton, it being thinned by the hand, and three-fourths of an acre is a task for a hand a day; all hoe work in the cotton consists in scraping up and the ridges, occasionally assisted, if needed, with what Mr. Cheatham calls

the horse-shoe; a most valuable invention, if I am not mistaken, of his—it is more like the scooter or buzzard plow, than any other. It is fixed to a rooster stock. One running of this plow on the side of the ridge, it being very sharp, cuts, or scrapes up all the young grass, the dirt that falls in between the rows is drawn up by the hoes, it being the main object never to work down the ridge, and always to draw up whatever gets worked down. By this method the ground is always well prepared; the ridges manured; the cotton planted regularly without a waste of seed; saving enough seed to manure a great many acres of corn; ten to eleven furrows to the row with the horse and plow preparing and making a crop of cotton, thereby dispensing with one-half the horse power, and saving one-half the great expense of sustaining that animal, to say nothing of its prime cost.

"Fearing that I may occupy too much space, permit me to close by saying, that Gov. McDuffie's plantation is a model that all should imitate. It is a model in every department of planting corn, or cotton, in manuring, in beauty and neatness of arrangement, and in management of the negroes, and for net income, surpasses most of the famed plantations of the West."

6.—ARTESIAN WELL IN CHARLESTON, S. C.

The operation of boring an Artesian Well having been resumed by Mr. Welton, of Alabama, I purpose, in accordance with my promise to his Honor the Mayor, to continue the examination of the matter brought up by the auger, and to record whatever may be of interest or bear upon the geology of this region.

The springs which supply the wells of Charleston are reached at from twelve to eighteen feet below the surface, in strata of white and gray sands with pebbles: these are supported by others of stiff blue clay, and of clay and sea-shells mixed, (indicative of the formation known to geologists as the post-pliocene of Lyell,) below which is a stratum of a substance resembling peat. All of these strata emit a fetid odor, and must not be penetrated in digging; the water being so offensive as to be unfit for use; hence, the wells in the city are seldom more than twelve or sixteen feet deep. These wells are all dependant upon the rains; which, percolating from the surface, are obstructed in their descent and held by this impervious layer of blue mud. In seasons of drought they become dry, or nearly so; and are at all times but the receptacles of the filth and offscourings of the surface, washed down by the rains. An inexhaustible supply of good water, at a depth easily attainable, and at a cost placing it within the means of private individuals, has long been a great desideratum. It is, therefore, with much pleasure I report the discovery of a water-bearing stratum underlying the city, which promises all that the citizens or Council can reasonably desire. "Some years ago an experiment was made in Charleston by Mr. Longstreet, to obtain pure water. He penetrated the earth 57 feet—20 feet by excavation in the common way; but the cavity filled so fast with muddy brackish water, that he abandoned this plan and resorted to boring, by which he succeeded to reach 37 feet more, when the water rushed up the tube to within 6 feet of the surface, yielding 15 gallons in a minute, and resembling common well water in taste and appearance, though purer."—(*Mills's Statistics*, p. 30.)

In the year 1823, Dr. Moser, in boring for water, by authority of Council, in the Poor-house yard, penetrated and passed through a stratum of coarse sand and gravel between the depths of sixty-one and sixty-seven feet. "When moistened with water, (I quote from his report, *Mills's Statistics*, p. 32,) it appeared to partake of the nature of quicksand, and evidenced the correctness of the conjecture, by making so much opposition to the sinking of our last iron tubes (which were 6 inches in diameter and $4\frac{1}{2}$ inches in bore,) that for every inch the auger descended, it filled in the bore about three feet, again to be bored out; this kept us at hard labor more than six months, when, to the great gratification of the commissioners and relief of the laborers, on the 12th January, 1824, the pipes settled firmly at 67 feet, on a stratum of olive colored clay marl, which, when heated, became of a white color, and so well preserved its arch as to render additional pipes unnecessary."

Nothing is said in his report about the water in this stratum, and it is presumed that Dr. Moser did not test its quality or quantity; or had allowed the bad waters of the upper springs to become mixed with it.

Gen. Brisbane, at the depth of fifty-three feet, encountered and soon passed through this white sand and gravel underlying the peaty stratum, but unlike Dr. Moser, he met with little or no resistance; the powerful lever used by Gen. Brisbane to force down his wooden cylinders soon placed him below it; and could he have exhausted the water at intervals in his cylinder, he would have been able to test the difference in the waters of the upper, middle, and lower springs. His pipes being wooden cylinders, it is presumed were not sufficiently water tight to admit of this. Mr. Welton, who is now engaged upon a new bore, uses cast iron tubes, in sections of ten feet, connected by wrought iron bands put on which, whose contraction in cooling, renders its joints nearly, if not quite, water tight. Upon reaching this lower bed of sand, he found it almost impossible to reduce the water in the tubes, and was fearful that the water from the middle springs (which is very offensive) had forced a passage on the outside of his tube down to the lower end, through which it entered. My experience in digging marl from this bed, about ten miles from the city, where it approaches within a few feet of the surface, assured me that this could not be the case; but on the contrary, that the water *must come from below*; and at my suggestion, the bucket was again manned, and Mr. Welton reduced the water to the joint of the third section of the tube. Lighted candles were then lowered, the joints found to be perfectly tight, and the water to be boiling up from the lower end of the tube. In a short time it was within six feet of the surface, and found to be fresh and very palatable. Buckets being filled, it soon became clear and settled, and was pronounced by the many who freely partook of it (among whom were some of our most respectable citizens) superior to the well water of the city.

By the ordinary tests, the salts, etc., which are found in the spring and well waters of this region, were detected; but the quantities of each have not yet been ascertained. For the purpose of washing, it is undoubtedly better than our common pump water, producing with soap a good lather.

Mr. Welton thinks the supply will be abundant, as the hard marl of the Eocene bed, which is impervious to water, underlies it. In a word, good wholesome water can be obtained in abundance by boring and tubing to the depth of about sixty feet. Viewed in a geological light, it will be interesting to ascertain the source from whence these waters are obtained. The hard marl, which is the impervious stratum underlying the sands, is exposed on the banks of Ashley river, about ten miles from the city, a little below Ashly ferry, and many springs of fine water are found flowing over it. Farr's spring in St. Andrew's Parish, about one mile from the ferry, has never been known to fail; it issues from this stratum of sand and gravel overlying the marl. In wet seasons, when the swamps are overflowed, smaller springs burst out around it from the sides of the hill, the water having apparently insufficient vent from the main spring.

At intervals during the last five or seven years the country has suffered from excessive droughts, but this spring, at all times, could supply water sufficient to flow in a few days the small rice field of some 6 or 10 acres which spreads out at its base.

At the plantation of Geo. Henry Smith, Esq., on Goose Creek, and about the same distance from Charleston, (10 miles) there is a spring of fresh water jetting out from the bottom of the creek, and through the salt water. This has been examined by Mr. Welton, who has little doubt of the practicability of tubing so as to exclude the salt water, and raise the fresh water sufficiently high to be available in flowing the extensive fields of rush-land which surround it.

A short distance inland, the hard marl of the Eocene bed is seen underlying a bold stream of fine water, issuing from the sand above. This spring has been estimated to yield over a million of gallons per diem.

The two last mentioned springs must be about the north edge of the basin, and all of them being found in the same stratum as that under our city, must derive their supplies of water from the same source.

Very respectfully, your obedient servant,

FRANCIS S. HOLMES.

COMMERCIAL MISCELLANIES, ETC.

1.—SUGAR, COFFEE, PEPPER, INDIGO.

IMPORTATIONS to, and stocks on hand, at the places designated, the 30th April, 1847, and 1848, as follows:

SUGAR.

	Imports.		Stocks.	
	1847.	1848.	1847.	1848.
Hamburg.....	11,900,000	22,200,000	6,500,000	23,000,000
Bremen.....	2,400,000	6,000,000	800,000	5,800,000
Amsterdam.....	47,700,000	57,600,000	29,000,000	44,000,000
Rotterdam.....	19,600,000	23,600,000	14,400,000	21,700,000
Antwerp.....	7,800,000	12,800,000	4,100,000	7,800,000
Havre.....	22,000,000	9,500,000	2,900,000	9,700,000
Bordeaux.....	8,700,000	9,200,000	1,800,000	7,000,000
Marseilles.....	10,090,000	14,100,000	2,900,000	4,300,000
Genoa.....	9,400,000	3,900,000	6,300,000	5,700,000
Leghorn.....	5,200,000	2,900,000	2,900,000	2,900,000
Trieste.....	28,100,000	30,800,000	14,300,000	16,900,000
Great Britain.....	270,400,000	179,200,000	168,200,000	201,600,000
Total.....	443,200,000	371,800,000	233,300,000	351,700,000

COFFEE.

	Imports.		Stocks.	
	1847.	1848.	1847.	1848.
Hamburg.....	25,700,000	26,500,000	16,500,000	22,500,000
Bremen.....	3,800,000	5,300,000	1,600,000	3,700,000
Amsterdam.....	28,300,000	31,100,000	31,000,000	52,700,000
Rotterdam.....	20,000,000	20,200,000	23,600,000	34,000,000
Antwerp.....	11,800,000	14,600,000	8,900,000	16,400,000
Havre.....	14,000,000	10,400,000	5,200,000	11,300,000
Bordeaux.....	3,000,000	3,400,000	3,900,000	4,400,000
Marseilles.....	5,000,000	5,900,000	900,000	2,500,000
Genoa.....	2,500,000	2,900,000	900,000	2,500,000
Leghorn.....	600,000	400,000	200,000	100,000
Trieste.....	11,700,000	14,800,000	7,900,000	17,700,000
Great Britain.....	7,200,000	9,900,000	37,500,000	38,700,000
Total.....	135,600,000	143,100,000	130,300,000	205,500,000

PEPPER.

	Imports.		Stocks.	
	Bags of 100 lb.	Bags of 100 lb.	Bags of 100 lb.	Bags of 100 lb.
Hamburg.....	18,148	7,899	8,500	10,005
Bremen.....	3,224	1,597	400	none.
Amsterdam.....	1,580	1,960	2,400	300
Rotterdam.....	6,212	1,876	2,320	3,636
Antwerp.....	none	none	15,378	20,592
Havre.....	178	none	220	none.
Bordeaux.....	4,190	890	18,000	12,000
Marseilles.....	2,100	7,404	4,850	7,510
Genoa.....	none	none	8,400	none.
Leghorn.....	450	990	3,000	1,120
Trieste.....	1,254	none	29,254	12,432
Great Britain.....	15,200	18,500	71,000	82,000
Total.....	52,446	41,226	163,752	140,605

INDIGO.

	Imports.		Stocks.	
	Chests E. India.	Chests E. India.	Chests E. India.	Chests E. India.
Hamburgh.....	1,192	1,582	280	430
Bremen.....	27	13	23	27
Amsterdam.....	4,152	3,061	4,570	4,400
Rotterdam.....	3,848	3,604	4,670	5,281
Antwerp.....	242	111	41	72
Havre.....	2,495	115	7,728	6,671
Bordeaux.....	620	332	3,300	2,319
Marseilles.....	68	143	23	138
Genoa.....	118	90	150	135
Leghorn.....	56	69	170	145
Trieste.....	118	103	480	490
Great Britain.....	4,442	4,390	29,024	28,984
Total.....	17,378	13,613	50,450	49,075

2.—GROWTH OF TEXAS—COTTON—SUGAR.

The following statements, extracted from the Galveston News, furnish interesting information respecting the Cotton and Sugar production of Texas:

In 1829, the whole cotton crop of Texas was about 500 bales; from that time to 1835, it had increased to between 3 and 4000 bales. In 1840, it amounted to about 8000 bales; since which time there have been three seasons of nearly a total failure, one occasioned by heavy rains, and two by the worm or caterpillar. The crop of '46 amounted to about 8000 bales, which was probably not more than half an average crop. The crop of '47, all of which has not yet reached our market, will exceed 40,000 bales. This shows an increase of about 33½ per ct. per annum for the last eight years. In these statements we omit altogether the crop of Eastern Texas, which has been shipped by way of Red River to New-Orleans, and the amount of which has been estimated variously, some even making it equal to the whole crop of all the rest of Texas. It is necessary here to remark that the aggregate of our cotton crop has been diminished, by the increased attention paid to sugar, to the amount of 2000 or 3000 bales; and the same cause is likely to operate more effectually in future as a check upon the increase of cotton.

Sugar has been made in Texas to a very limited extent and for domestic uses* for many years; but no mills for manufacturing it as an article for market or export, have been introduced till very recently. The first export of sugar was about 50 hhds. of the crop of 1846. Of the crop of last year (1847) the export has amounted now to 500 hhds. which will be increased to about 600. The whole of that crop does not vary much from 2000 hhds. So that about 1,400 find a market at home. Full half of that crop was probably destroyed by the early frost last fall. This year the production, with a favorable season, will amount to at least 5000 hhds. and probably more; and the amount will increase probably full 50 per cent. per year for some years to come.

Two years and a half since, we travelled the country from Seguinte to New-Braunfels, San Antonio, and other interior towns. There was not then a single settler on the Cibolo, nor could one be found on the whole route from San Antonio to New-Braunfels, nor from the latter place to Austin. A gentleman just from New Braunfels, where he has resided ever since that town was built, informs us that all this country is now scattered over with small, but flourishing and prosperous farms. The Cibolo and other streams in the vicinity of San Antonio are filled up with continuous settlements. New-Braunfels has more than doubled in size, and the Guadalupe below to Seguinte is covered with many small and some pretty large plantations cultivated by negroes. The town of Fredericksburg on the Pterdenales has also greatly increased, and the surrounding country is said to be filled with an industrious population of German farmers. Settlements have been made still higher upon the Llano and San Saba, and all of them are prosperous and undisturbed by Indians. We are glad to learn that the German colonists there have this year planted an abundance of corn which, in many instances, is the first agricultural experiment ever made in that region. This crop is remarkably fine, and far exceeds the expectations of the emigrants. They have had fine seasons of rain, and the corn is now so nearly matured that it is out of all danger from drought. The same is also the case in Castro's Colony on the Medina. There are three or four settlements of the German Communists on the Llano numbering nearly one hundred, who are said to be very intelligent and enterprising; they are mostly young men. At present they have no women among them.

3.—OUR TREATY WITH GRENADA AND THE PASSAGE OF THE ISTHMUS OF PANAMA.

ARTICLE 35. The United States of America and the republic of New Granada desiring to make as durable as possible the relations which are to be established between the two parties by virtue of this treaty, have declared solemnly, and do agree to the following points :

1st. For the better understanding of the preceding articles, it is and has been stipulated between the high contracting parties, that the citizens, vessels, and merchandise of the United States shall enjoy in the ports of New Granada, including those of the part of the Granadian territory generally denominated *isthmus of Panama*, from its southernmost extremity until the boundary of Costa Rica, all the exemptions, privileges, and immunities concerning commerce and navigation, which are now or may hereafter be enjoyed by the Granadian citizens, their vessels, and merchandise, and that this equality of favors shall be made to extend to the passengers, correspondence, and merchandise of the United States, in their transit across the said territory from one sea to the other. The Government of New Granada guarantees to the Government of the United States that the right of way or transit across the *isthmus of Panama* upon any modes of communication that now exist, or that may be hereafter constructed, shall be open and free to the Government and citizens of the United States, and for the transportation of any articles of produce, manufactures, or merchandise, of lawful commerce, belonging to the citizens of the United States; that no other tolls or charges shall be levied or collected upon the citizens of the United States, or their said merchandise thus passing over any road or canal that may be made by the government of New Grenada, or by the authority of the same, then is, under like circumstances, levied upon and collected from the Granadian citizens; that any lawful produce, manufactures or merchandise belonging to the citizens of the United States thus passing from one sea to the other, in either direction, for the purpose of exportation to any other foreign country, shall not be liable to any import duties whatever; or, having paid such duties, they shall be entitled to drawback upon their exportation; nor shall the citizens of the United States be liable to any duties, tolls or charges of any kind to which native citizens are not subjected for thus passing the said isthmus. And, in order to secure to themselves the tranquil and constant enjoyment of these advantages, and as an especial compensation for the said advantages, and for the favors they have acquired by the 4th, 5th, and 6th articles of this treaty, the United States guaranty positively and efficaciously to New Grenada, by the present stipulation, the perfect neutrality of the beforementioned isthmus, with the view that the free transit from the one to the other sea may not be interrupted or embarrassed in any future time while this treaty exists; and in consequence, the United States also guaranty, in the same manner, the rights of sovereignty and property which New Granada has and possesses over the said territory.

4.—OUR TREATY WITH MEXICO AND THE SOUTH-WESTERN BOUNDARY OF THE UNITED STATES.

ARTICLE V.—The boundary line between the two Republics shall commence in the Gulf of Mexico, three leagues from land, opposite the mouth of the Rio Grande, otherwise called Rio Bravo del Norte, or opposite the mouth of its deepest branch, if it should have more than one branch emptying directly into the sea; from thence up the middle of that river, following the deepest channel, where it has more than one, to the point where it strikes the southern boundary of New Mexico; thence, westwardly, along the whole southern boundary of New Mexico (which runs north of the town called *Paso*) to its western termination; thence, northward, along the western line of New Mexico until it intersects the first branch of the River Gila, (or if it should not intersect any branch of that river, then to the point on the said line nearest to such branch, and thence in a direct line to the same;) thence down the middle of the said branch and of the said river, until it empties into the Rio Colorado; thence, across the Rio Colorado, following the division line between Upper and Lower California to the Pacific Ocean.

The southern and western limits of New Mexico mentioned in this article, are those laid down in the map entitled "*Map of the United Mexican States, as organized and defined by various Acts of the Congress of the said Republic, and constructed according to the best authorities. Revised Edition. Published at New-York, in 1847, by J. Disturnell,*" of which map a copy is added to this treaty, bearing the signatures and seals of the undersigned plenipotentiaries. And, in order to preclude all difficulty in tracing upon the ground the limit separating Upper from Lower Califor-

nia, it is agreed that the said limit shall consist of a straight line drawn from the middle of the Rio Gila, where it unites with the Colorado, to a point on the coast of the Pacific Ocean distant one marine league due south of the southernmost point of the port of San Diego, according to the plan of the said port made in the year 1782, by Don Juan Pantoja, second sailing master of the Spanish fleet, and published at Madrid in the year 1802, in the atlas to the voyage of the schooners *Sutil* and *Mexicana*, of which plan a copy is hereunto added, signed and sealed by the respective plenipotentiaries.

In order to designate the boundary line with due precision, upon authoritative maps, and to establish upon the ground landmarks which shall show the limits of both republics, as described in the present article, the two Governments shall each appoint a Commissioner and a Surveyor, who, before the expiration of one year from the date of the exchange of ratifications of this Treaty, shall meet at the port of San Diego, and proceed to run and mark the boundary in its whole course to the mouth of the Rio Bravo del Norte. They shall keep journals, and make out plans of their operations; and the result agreed upon by them shall be deemed a part of this treaty, and shall have the same force as if it was inserted therein. The two governments will amicably agree regarding what may be necessary for these persons, and also as to their respective escorts, should such be necessary.

The boundary line established by this article shall be religiously respected by each of the two republics, and no change shall ever be made therein, except by the express and free consent of both nations, lawfully given by the General Government of each, in conformity with its own Constitution.

ART. VI.—The vessels and citizens of the United States shall, in all time, have a free and uninterrupted passage by the Gulf of California, and by the river Colorado below its confluence with the Gila, to and from their possessions situated north of the boundary line defined in the preceding article; it being understood that this passage is to be by navigating the Gulf of California and the river Colorado, and not by land, without the express consent of the Mexican Government.

If, by the examinations which may be made, it should be ascertained to be practicable and advantageous to construct a road, canal, or railway, which should in whole or in part run upon the River Gila, or upon its right or its left bank, within the space of one marine league from either margin of the river, the Governments of both republics will form an agreement regarding its construction, in order that it may serve equally for the use and advantage of both countries.

ART. VII.—The river Gila, and the part of the Rio Bravo del Norte lying below the southern boundary of New Mexico, being agreeably to the fifth article, divided in the middle between the two republics, the navigation of the Gila and of the Bravo below the said boundary shall be free and common to the vessels and citizens of both countries; and neither shall, without the consent of the other, construct any work that may impede or interrupt, in whole or in part, the exercise of this right, not even for the purpose of favoring new methods of navigation. Nor shall any tax, or contribution, under any denomination, or title, be levied upon vessels, or persons navigating the same, or upon merchandise or effects transported thereon, except in the case of landing upon their shores. If, for the purpose of making the said rivers navigable, or for maintaining them in such state, it should be necessary or advantageous to establish any tax or contribution, this shall not be done without the consent of both Governments.

The stipulations contained in the present article shall not impair the territorial rights of either republic within its established limits.

5.—LAW CASE.—DAYS OF GRACE.

A very important case has lately been decided in New Orleans, and the decision will, if confirmed by the Supreme Court of Louisiana, lead to a revolution in the system of drawing drafts upon Northern cities. It seems that a certain banking firm in New Orleans had drawn several bills, payable at sight, upon their correspondent banking establishment in New York, which bills were not paid on presentation, the drawers failing between the time of the drawing of the bills in New Orleans and their arrival in New York. The bills were protested on the first day of presentation and refusal to pay, and returned for recourse against the drawers. The latter, being sued, pleaded in defence that three days of grace were not allowed on the bills, and that the demand and protest should have been made on the third day following the first demand. The holders of the bills replied that, by custom of merchants in New York, no days of grace upon sight bills were given, and it was usual to protest on a first refusal and offered to prove this by the evidence of a number of exchange dealers. To the introduction of evidence to this effect the defendants (drawers of the bills) objected, because the elementary writers and the various judicial dicta held positively that days of grace must be given on sight drafts, and no evidence of custom could be admitted to control or vary positive law. The learned counsel, and the plaintiffs, holders of the bills, were

6.—THE OLDEN TIME IN NEW-ORLEANS AND YELLOW FEVER.

Our friend Maunsel White, who has made a part of New-Orleans, and in many respects *magna pars*, for a longer period than the American history of the city extends, favors us occasionally with some most interesting reminiscences of the "olden time." We published last year his descent of the river in a flat boat in 1801, and the incidents of that "wild and perilous adventure," which might have deterred a stouter spirit. There is a world of romance in the history of *those days*, but it has all passed from ours, and has been gone ever since, in an unhappy hour, Fulton dreamed of the steamboat, and sent it puffing and blowing over our waters. We can fancy the keen interest of the boatman, the anxious and inquiring passengers, the busy preparations, and the thousand hair breadth 'scapes of the voyage then:

"In dreams *they* fearful precipices tread,
Or shipwreck'd, labor to some distant shore:
Or in dark churches walk among the dead—
They wake with horror and dare sleep no more."

However, we have a sketch to present the reader, showing how the great commercial Tyre, with her merchant fleets traversing every ocean upon earth, looked in her "swaddling clothes," creeping about on hands and knees, liasing English, fifty years ago or thereabouts; for to this deponent's memory "runneth not counter." The cobwebs of half a century hang heavily here. We seem to have reached a dim antiquity indeed, and wonder whether Homer or Agamemnon were not contemporary. In good sooth, in running back thus to those fabulous epochas, our friend looms up in fancy as a very Methuselah! But the frosts of all this period have fallen lightly; or he has found, (perhaps in Plaquemines,) that *perennial* spring, sought so vainly and despairingly in Florida, by the men of yore.

However, our friend is scarcely yet a *sexagenarian*, and has much still to do in his day and generation, and seems little disposed to enjoy altogether the *otium cum dignitate* of country life and hospitalities. We find him in the councils of the State at all times ready to serve as he was to defend her in the days of Hickory Packingham. We hear of his deeds of practical good daily. His labors in behalf of the University of the State have been unremitting and important. We are familiar with his valuable donation for the establishment of a branch of *Commercial Instruction and Political Economy*. These things he will not forgive us for mentioning; and for them and divers others of a like complexion, there will most undoubtedly have to be a retribution hereafter. "Strike, but hear me," at least! J. D. B. DE Bow, Esq.

SIR,—The morning was calm and bright. A cloudless sun poured down its rays, and the waters of the Mississippi were smooth and still, except when slightly agitated by the ripple made by the stroke of our oars. We landed our fleet of flat boats a little above Gravier, and within ten steps of Tchapitoulas streets, at 10 o'clock in the morning on the 1st of August, 1801, after a *passage of 60 days from Louisville in Kentucky*. The writer, then a mere lad, thought New-Orleans to be a very queer looking place, and was astonished at the jargon of strange tongues. The city at that time was in the hands of the Spaniards, and Don Manuel Salcedo Governor. It was a fortified town. There was a moat or ditch cut around it, and an embankment with palisades and several small redoubts placed at convenient angles. These works were in a state of decay at that time, and were of no defence to the city. They ran from the river where Canal street now is, back to Rampart street, thence down to Esplanade street, and from Esplanade to the river, below where the mint now stands. There were three gates, through which *people passed from 6 o'clock in the morning until 9 o'clock at night, when they were shut. At each gate was placed a sentry-box with a corporal's guard. In*

those days of Spanish rule a corporal was an important man, and marched before the Governor, when he took his evening's walk on the levee, to clear the way should any one dare approach him, without a low bow, or without leaving a wide birth. The free and easy Kentuckians were particularly obnoxious, as they could not comprehend why a mere man in the shape of a Governor should be any better than themselves, and looked with astonishment at the deference paid by the Spaniards to such a decrepid old fellow as Governor Salcedo then was.

The day after our arrival a case or two of yellow fever was reported in the city, and we hired a house in the Faubourg St. Mary, in Poydrass-street, between Magazine and Tchaptoulas streets, the only house at that time in that square except one. This place was then considered in the country, and beyond the limits of yellow fever! It was a low, one story building, with four rooms in the body and two galleries. While the family with whom I resided were arranging this residence, I was occupied unloading the boats then laying at the levee in front of Tchaptoulas street. Our cargo was rolled out and across that street into the stores of Mr. Lytle Jaspie, who then lived at the corner of Gravier street, fronting the river. On the other side of Gravier street lived the captain of the port, in a wooden frame building. On the corner of Common street there stood a small sailors boarding-house, and between that and the gate or ramparts of the city there was no building of any kind, but only an open piece of ground, extending from the river to the woods, at that time not cleared away beyond where the State-house now stands. All that space of ground between Common, Poydrass, Magazine, and Carondelet streets was used for vegetable gardens. Where the St. Charles Hotel now stands, and all the buildings between Gravier and Common streets, was old Mr. Percy's cabbage garden!

But I am digressing—I must return. After we got out our cargoes of flour, tobacco and pork, and the hands were paid off, and all our bold Kentuckians had started for their far homes, we began to think of selling out. In the meantime, the yellow fever began to spread, and a gentleman from Kentucky, who came down and lived with us, and who was continually out in the city, took it, but escaped after eight days' illness. Mrs. E. was then taken down, and died in a few days. This event broke up our house-keeping, and Mr. E., with his only child, and the writer, took up our abode in the city at Madam Chabbot's, a house as well known at that period as is the St. Charles now. The fever continued, and several were taken to their long homes from this house. My room was opposite to what was called the Hospital Room, out of which I saw a fellow-boarder taken the day before. Alas! there was no help for it, but to take my chance. On Monday night, after about one week's residence here, I found myself sure enough "a case," and in the morning, not having made my appearance at breakfast, a servant, dispatched to my room, told the story of my fate. Doctor Flood was sent for; he came, looked at my tongue, felt of my pulse, gave me some medicine and left me. In the meantime, in came Nanny, a great stout, strapping Negro woman, who wrapped me up in a sheet, took me up in her arms as one might take a baby, and carried me off *volens volens* to the hospital-room, where she placed me in a bed, occupied, perhaps, before, by hundreds who had died. I became very sick. The medicine had its effect, and Nanny was very attentive. Wednesday passed with one other *douce*—and on Thursday morning, Madam Chabbot, a good hearted lady, and by birth an Irish woman, came to see me. I was dozing away. She lifted up the mosquito net, and the room being dark, took a long, steadfast look at me, pursed up her mouth, shook her head, and departed. I remember that look to this day; but I said to myself, somewhat out of humor, "I am a better fellow yet than you think for, old woman—zounds!" and turned myself in a hurry in the bed. In a few minutes in came Nanny, bringing something on her shoulders very much in my fancy like a coffin. I exclaimed involuntarily, "What now?" The energy with which I spoke, roused the old woman, and she came quickly to the bed-side, drew up the net, and looked at me in seeming surprise. "What's the idea, Nanny," said I; "are you about to bury me alive?" "No," said she, "don't you see it is nothing but a bathing-tub!" suspecting at once that I had mistaken it for a coffin. "Ah! well," said I, somewhat relieved, I must confess, by the announcement. "Where is the Doctor?" "He is coming, and will be here before I get the water ready. Doctor Deluge soon made his appearance, and ordered Nanny to place me in the tub. No sooner said than done; for in Nanny's arms there was no use in kicking, and down I set me in the tub, with a wench as stout as herself on each side, with a large bucket of cold water in their hands. On they poured it, unsparingly, bucket &

bucket. It seemed as if the very Mississippi were pouring over me. The shock was terrible, but I had no time for reflection. I was quickly taken out, wrapped in a dry blanket, and placed on a table, like a dead man. All now commenced rubbing with dry towels, with all their might and main. They then put me into bed, on a new well-aired mattress and clean sheets, and covered me over with blankets, until I thought I should have been suffocated.* The doctor left without uttering an other word. I begged Nanny to take off some of the blankets, telling her I was better, and did not wish to smother. She indulged me in this very natural wish the moment she found my skin warm. I began very soon to perspire freely, and finally fell asleep, and did not wake until late on the morning of the next day, (Friday;) Nanny was near me, and with a smile on her grim countenance, asked how I felt. "Hungry!" said I, fiercely, "you imp of darkness." The good Madam Chabbot, heaven rest her, was soon at my bed-side, took me by the hand, and seemed happy to think I was safe. "But don't be imprudent," she charged me. The next morning, Saturday, I was up, rather weak, to be sure, but still cured of yellow fever. Thanks to God, a good constitution, the Doctor and Nanny, etc.*

I am your obedient servant,

MAUNSEL WHITE.

7.—THE BRITISH REVENUE.

An abstract of the net produce of the Revenue of Great Britain, in the years and quarters ending the 5th of July, 1847 and 1848, showing the increase or decrease thereof.

	Years ending July 5.		Quarters ending July 5.	
	1847.	1848.	1847.	1848.
	£	£	£	£
Customs.....	18,792,348..	17,888,988.....	4,519,119..	4,447,832
Excise.....	12,733,998..	12,263,233.....	3,291,052..	3,473,803
Stamps.....	7,201,797..	6,449,108.....	1,869,464..	1,557,640
Taxes.....	4,325,732..	4,306,703.....	2,075,001..	2,034,133
Property Tax.....	5,491,936..	5,411,253.....	1,036,517..	988,401
Post-Office.....	854,000..	787,000.....	215,000..	136,000
Crown Lands.....	112,000..	71,000.....	— ..	10,000
Miscellaneous.....	307,621..	230,201.....	7,461..	89,022
Total Ordinary Revenue.....	49,819,432..	47,407,486.....	13,013,614..	12,736,831
China Money.....	227,644..	455,021.....	— ..	—
Imprest & other monies.....	208,190..	187,408.....	88,632..	88,805
Repayments of Advances.....	804,843..	422,485.....	137,944..	86,813
Total Income.....	51,060,109	48,472,400	13,240,190	12,912,449

8.—POSTAL REFORM.

The law recently passed by Congress, known as the Retaliatory Act, is very vexatious and annoying in its provisions, and has given universal dissatisfaction in this community. The charge upon American letters in England when taken by our steamers, to be sure is too great, but we do not see how we remedy the evil by taxing the letters an equal amount here. The cost of taking letters and papers under the new law from New-Orleans to Liverpool, is as follows:—

	Letters.	Papers.
New-Orleans to New-York.....	\$0 10.....	\$0 3
"Retaliation" tax.....	0 24.....	0 4
Steamer postage.....	0 24.....	0 4
	0 58.....	0 11

These charges are enormous, and cannot but have a most injurious effect upon the now friendly intercourse between the two countries. Upon newspapers, the tax is

* Cold water should never be applied in the last stage of yellow fever, or on a weakly constitution. But I sincerely believe, if applied at the proper moment, it would prove an efficacious remedy. Several were treated in 1801 in the same way, and nearly all recovered.

doubly severe. Thousands who now send a paper across the Atlantic, must now, from motives of economy, abandon the practice. The cost of English papers to American publishers is also increased to an onerous degree. A London daily costs five pence sterling, which gives a yearly

Cost of.....	\$31 20
Postage.....	12 52
Cost for year.....	\$43 72

Few papers in New-York have less than four London dailies, to say nothing of the large number of weeklies, that go to make up an amount equal to the whole subscription list of a country press, which depends upon its city exchanges for news. The whole operation of the retaliatory law is vexatious and unproductive of the least good, and the sooner Congress repeals it the better, for every reading or writing person in the country.

9.—VENEZUELA.—MARACAIBO BLOCKADED.—DECREE.

Art. 1. The port of Maracaibo, and coasts adjacent,* are declared to be in a state of blockade. This blockade will, for the present, be effected by a division of the maritime force, composed of six vessels of war: this number to be hereafter increased.

Art. 2. Vessels of war of friendly or neutral nations are permitted to enter, remain in, and sail from Maracaibo, the government being persuaded that they will not, in any way, assist the conspirators.

Art. 3. The blockading force will prevent the entry of all merchant vessels; and any intending to enter after notice that the blockade exists, shall be detained and adjudicated according to law and international rights. For the notice above alluded to, eight days are fixed for the Island Curacao, and its dependencies; fifteen for the other West India Islands; forty for the United States and Europe, from the date of this decree.†

Art. 4. Vessels coming from distant ports, and which can show that they had no knowledge of the blockade, shall not be in any way molested; they shall not, however, be permitted to enter Maracaibo, but may proceed whithersoever they determine.

Given under my hand, and the seal of the Executive Power, and countersigned by the Secretary of State, of War, and of Marine, in Caracas, 11th May, 1848, 19th year of the law, and 38th of Independence.

(Signed) DIEGO B. URBANEJA.

By order of his Excellency the Vice-President of the Republic, in charge of the Executive Power, the Secretary of State of the Departments, of War, and Marine.
Venezuelan Consulate, 23d June, 1848. FRANCISCO MEJIA.

PUBLISHING BUSINESS.

1. *Orta Undis and other Poems.* By James M. Legaré. Boston: W. D. Ticknor. 1848.

We are indebted to the author for a copy of a neat little volume with this caption. It embraces a collection of those effusions of his pen, which have given him at a very early age, a high reputation in song. Many of the pieces have much merit, and they are all characterised by a true poetic fervor and tenderness. We knew the author in more youthful times; and it was our fortune to share the instructions of a common *alma mater*. He had even then begun to assume position. It rejoices us, after a lapse of several years, to find him still upon the bright road to fame.

From the volume before us, we extract a few verses on the death of *Hugh S. Legaré*, which we have always thought very fine.

* By a minute of the Secretary of State, dated 17th May, 1848, the "coasts adjacent to Maracaibo" comprise all within what is properly called the "Saco de Maracaibo," between Cape San Roman, in the peninsula of Paraguaná, and the "Punta de la Espada," in the Peninsula of Guayana.

† By the same minute, these terms of notice are partially extended, viz.: for vessels coming from Europe, to 60 days; from Demerara and the West Indies, (excepting Curacao and its dependencies, St. Thomas and Santa Cruz,) 30 days. During the terms of notice respectively allowed, the Blockading Squadron will notify to all merchant vessels the existence of the Blockade by a minute on the vessel's register, &c.; and only in case of attempting, after such notice, to enter, will vessels be detained.

ON THE DEATH OF A KINSMAN.

I see an eagle winging to the sun—
 Who sayeth him nay?
 He glances down from where his wing hath won:
 His heart is stout, his flight has scarce begun—
 Oh hopes of clay!

Saw he not how upon the cord was lain
 A keen swift shaft;
 How death wrought out in every throbbing vein,
 In every after agony of pain
 His bitter craft!

Therefore him Fame had written fair and high
 Upon her scroll,
 Who fell like sudden meteor from the sky—
 Who strenuous to win at last did die
 E'en at the goal.

Like old Demetrius the sun had he
 Beheld so long,
 Now things of earth no longer could he see,
 And in his ear sang Immortality
 A pleasant song.

Icarus like he fell when warm and near
 The sunshine smiled:
 He rose strong-pinioned in his high career—
 Thy dust remains, thy glorious spirit where
 Minerva's child?

2. *Index to the Reviews and Periodicals of the day*, by the Brothers in Unity Society of Yale College. New-York: G. P. Putnam. 1848. This volume supplies a valuable place in regard to every library. It is the result of immense labor, but will save infinitely more in the usages to which it may be applied. We have often and often had to search over a hundred musty books to find what at a glance this index gives. We can tell where to put our very finger upon information upon almost every subject of the most valuable kind, which is scattered through the reviews and magazines that have been published in the last fifty years, in Europe and America. The whole number of books indexed in the volume is 560. The present edition being nearly exhausted, a new one will be published, containing in addition, the names of all the authors to articles in the North American, a list of American publications, &c.¹ The price of the work is very low, and all should have it.

3. *The Western Journal*, of Agriculture, Manufactures, &c., &c., by M. Tarver & T. F. Risk. St. Louis, monthly. June, 1848. With the present number, the first volume of this interesting magazine closes. We have watched its progress with much interest and favor. Established in the heart of the north-west, and embracing all the extensive interests of that prosperous section of the Union, this publication ought to receive a large support. We have always welcomed it to our table for the information it imparts. The original papers are always numerous and the selections good; the senior editor, Mr. Tarver, we have known a long time as a very able writer and thinker. To his enterprize, we wish, with all our heart, "God speed."

4. *Farmers' Library*: John S. Skinner. June, 1848. We have not had time yet to pay our respects to this veteran agricultural editor, who has now become the proprietor of the journal he has raised to so well earned reputation. Mr. Skinner will remove it to Philadelphia and change the name for one he regards more national—"The Plow, the Loom and the Anvil." The title will explain itself. Success to our contemporary in all his efforts to advance and extend American industry.

The *Farmers' Library* has been printed three years, and six handsomely bound volumes, of 600 pages each, are offered by Mr. Skinner for \$15, or if more than one set be taken, \$12. He should soon run off his supply at these rates.

5. *Bankers' Magazine*: Baltimore. 1848. The second volume of this work is now completed, and as the best index to its merits we furnish the table of contents.

I. Bank Statistics of each State: showing the condition of the whole; with the location, name and capital, and names of President and Cashier of every Bank in the U. S., arranged in States and in Towns alphabetically.

II. Finances, Debts, Revenues, and Expenditures of every State in the Union, and of the U. S.

III. Important Law Decisions in the English and American Courts respecting Banks, Bankers, Bills of Exchange, Brokers, Promissory Notes, Stocks, Corporations, Bank Notes and Commercial Law.

IV. Essays upon Currency, Banking, Finance, &c.

V. Biography of Distinguished Bankers, Girard, Rothschild, Ricardo, Coutts and others.

VI. Historical and Statistical Notices of the Currency of Hamburg, Russia, France, Great Britain; of the Bank of England, Bank of France, &c.

VII. Railroad Maps of Great Britain and the United States, showing the location of every Railroad route in Great Britain, and proposed routes from Baltimore and Boston to St. Louis.

Published Monthly, at three dollars per annum.

EDITOR'S NOTE.

In this and the last number, we have used a smaller type and thinner paper, so that the work appears smaller than it is. As the hot weather passes away in New-Orleans, and men can work again with spirit, the reader may rely upon our accustomed enlargement of the Review. We have always given more than we bargained for, when the volumes are considered.

Propos of volumes. We have now five, handsomely bound, and should be much pleased to receive orders for them. Our number is limited, and as the reprint required an immense outlay, we trust the friends of the work will interest themselves in getting orders for us.

We again beg most earnestly for remittances from all who are indebted to the Review.

Many of our advertisements are again left out. If the parties will bear with us, they shall have their full complement of months.

THE COMMERCIAL REVIEW

OF THE
SOUTH AND WEST.

ESTABLISHED JANUARY 1, 1846.

J. D. B. DE BOW, EDITOR AND PUBLISHER.

Volume VI.

SEPTEMBER, 1848.

No. 3.

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TO OUR SOUTHERN AND WESTERN FRIENDS.

It is always unpleasant to talk about fiscal matters with our friends, but they must excuse us from the very necessity of the thing. This hard, harsh world, brushes off some of our nice susceptibilities, do what we will.

Some three years ago we instituted the *Commercial Review*, the first work of the kind ever attempted in the Southern or Western States, and but the second in the whole Union. The idea was novel, and every one predicted its inevitable failure. Our faith, however, was strong, though the discouragements were legion.

We have gone on, and no one has lost a dollar by us. From every section of the Union, the highest and the most flattering possible testimonials have been paid to the character and usefulness of the work.

But what have the Editor and Publishers realized from the three years of unremitting toil? Literally nothing!

At the present moment there remains due to the publication *Eight Thousand Dollars*, by subscribers who have received the work regularly, who are in general men of means, and who would scorn as evidence of utter pettiness any high appreciation of a *Five or Ten Dollar* note. Six hundred of these subscribers are indebted for one year. Three hundred for two years, and fifty for *three* years!

Alas! that we cannot say of these as King Lear of old said of the winds and the storms,

"You owe me no Subscription."

Now these gentlemen, from inattention or carelessness, or what you will, do themselves and us great injustice. We are crippled at every step; obliged to curtail our expenses and economise, notwithstanding a desire of the utmost liberality in: improving, embellishing and illustrating a work which is for *their benefit*, and we fondly hope for our whole region. *Eight Thousand Dollars* in our hands, and what could we do with it! And yet why should we not have it—why? Have we not had to pay out of our own pocket for the printing, the paper, the binding, the writers, the clerks employed upon the books which have been sent to you from month to month, in the abiding confidence that you would sacrifice everything rather than we should *lose one cent*. Nor is that confidence yet gone. We have had to contract debts and borrow money frequently ourselves. Let us appeal to you, gentlemen, one and all, who are indebted to the *Review*; come forward to a man, and by the next mail send us the *pittance* that *remains due, even if it must be borrowed from a friendly neighbor*. Such liberality would be worthy of you, and of the cause in which we are engaged.

But more than this. We desire the liberal co-operation of our subscribers, who we believe are all our friends, in enabling us to build up the work to the highest perfection. We wish their correspondence, and whatever facts may be within their possession, illustrating any of the various subjects upon which we are employed. It is in their power to impart much. They have all an influence, too, with their friends and neighbors, and each could secure, without difficulty, the subscription of one or two to our enterprise. By showing the numbers and urging the cause they must succeed. Many have already done this, and merited our lasting gratitude. Will others remember us?

The Merchants have in the *Review*, carefully compiled and digested, all the statistics of the trade and commerce of our own and other countries, and a mass of matter upon every subject interesting to general trade, or that especially of the *South*. We have labored for the merchants. We have urged their claims in the University, and the establishment, for the first time, of a *Commercial Professorship*. The lectures of that chair will all be published in the pages of the *Review*. If one in one hundred of Southern merchants alone encouraged us, what success would be ours!

The Cotton Planters find in the *Review* everything, from any source from home or abroad, that can relate to or affect their great staple, either in the fields, in the warehouse or the manufactory. Alas, did even one in a thousand of them throughout Virginia, the Carolinas, Tennessee, Mississippi, Georgia, Louisiana, Alabama, Florida, Texas, appreciate and sustain the work!

The Sugar Planters.—Since the *Review* has begun, we have published a thousand pages relating to sugar, from the most practical planters, chemists, manufacturers, where nothing had ever before been published in this country. We are now publishing in the *Review*, and will complete this year, the great work entitled the

SUGAR-PLANTERS' MANUAL. BY DR. EVANS, OF LONDON.

This has lately appeared in England, and the three or four copies that reached New-Orleans sold for \$4.50 in boards. There are 1500 or 2000 sugar planters in Louisiana and Texas, and of these perhaps 300 are our subscribers. Should they not all have Dr. Evans' work, to say nothing of the *Review* and its abundant other matter?

Our Bound Volumes.—Finally: We have sets of the *Review* from the beginning, January 1845, handsomely bound and re-printed at great expense. They embrace complete statistical records interesting to merchant, citizen, statesman, sugar-planter, cotton-planter and farmer, and we solicit orders from all. Every subscriber should have the work complete. We will supply numbers to make up sets, and have them bound at cost.

We have made arrangements to *enlarge* the *Review* nearly *one third* after this number, and otherwise greatly add to its interest and value.

ES Please distribute the enclosed Circulars.

THE COMMERCIAL REVIEW.

Volume VI.

SEPTEMBER, 1848.

No. 3.

Art 1.—SUGAR.

CANE SUGAR—ITS PHYSICAL AND CHEMICAL PROPERTIES—ACTION OF RE-AGENTS ON—MOLASSES—TREACLE—ANATOMY AND PHYSIOLOGY OF THE CANE—COMPOSITION OF CANE-JUICE—CHANGES PRODUCED UPON IT BY RE-AGENTS—ALTERATIONS PRODUCED DURING THE LIFE OF THE PLANT.

THE substance, the nature and properties of which it is our purpose to investigate in the present chapter, is the one denominated by chemists cane sugar, or crystallizable sugar. It is the ordinary sugar of commerce.

The presence of this non-azotised proximate principle is not confined to the sugar-cane, as the name usually given it would indicate, although it was from this source alone that Europe was supplied with it for many ages; but it is likewise found in the stalks of many grasses, particularly in those of the maize and guinea-corn, in the roots of the carrot, beet, &c., in pumpkins and melons, in the sap of the palm, and in most of the tropical fruits, from all of which, and also from other sources, it has been obtained by the chemist; but the sugar-cane, the Silesian beet-root, the sugar-maple, and the palm, are the only plants resorted to for this purpose by the manufacturer.

From whatever plant it may have been obtained, cane sugar, when separated from its accompanying impurities by a process of refining, is physically and chemically identical. Although, when in that state of admixture with other foreign substances that constitutes what is called moist or muscovado sugar, its origin is readily recognized.

Cane sugar, when pure, is solid, transparent and colourless. It crystallizes from its watery solution in oblique rhomboidal prisms; but if to the solution certain foreign matters be added, as alcohol for instance, the form of the crystals is very much modified. When bruised in the dark, it is seen to possess phosphorescent properties, and becomes luminous.

It is soluble in one half of its weight of water at the temperature of 60°, and in one fifth of its weight at the boiling point. It is

sparingly soluble in alcohol when cold, but boiling alcohol will dissolve one-fifteenth of its weight which it deposits on cooling.

The specific gravity of *anhydrous* cane sugar is calculated at 1600, that of water being 1000; but as in its natural condition it always contains water in combination, and, moreover, as it is found that sugar, when dissolved in water, undergoes an augmentation of volume of about one-fifteenth of its original bulk, the density of its solutions is much less than the above figures would lead us to expect. The *apparent* density of sugar differs much, owing to a variety of causes. Thus the refined sugars of France are much more loose and spongy in texture than those which have been refined in this country, and therefore they appear to possess a lower specific gravity; but these qualities are given to them expressly to suit the wishes of the respective customers.

It has been already stated, that the composition of cane sugar consists of 12 atoms of carbon, 10 atoms of hydrogen, and 10 atoms of oxygen, combined with 1 atom of basic water, which is displaced when the sugar enters into combination with other bases. The atomic weight of these elements are: hydrogen, 1; oxygen, 8; and carbon, 6; hence $C\ 12 = 72$, $H\ 10 = 10$, $O\ 10 = 80$, must give 162 as the equivalent or combining number of 1 atom of anhydrous sugar. Water is composed of 1 atom of oxygen, united with 1 atom of hydrogen, consequently its atomic weight must be equal to 9.

The proximate vegetable principle, cane sugar consisting, as has been shown, of 1 atom of anhydrous sugar = $162 + 1$ atom of water = 9, it necessarily follows that its atomic weight must be 171; that in every 100 parts it must contain 5.3 of water; and that its specific gravity must be 1600 less fifty-three one hundredths of water, and less one fifteenth of the bulk of the sugar allowed for its expansion when dissolved in water.

Cane sugar, like all other organic substances, undergoes decomposition from slight disturbing causes. When pure, however, it is not prone to undergo any chemical change by mere exposure to the atmosphere: we have an instance in ordinary refined sugar, which may be kept for an indefinite period without alteration.

A syrup obtained by dissolving two parts by weight of very pure cane sugar in one part of water, may be kept for some time without undergoing any change; but at length it acquires a somewhat darker colour, and a portion of it, by combining with the elements of water, is slowly converted into glucose. But if it be exposed to a temperature of 180° or 200° , either in a closed vessel or exposed to the atmosphere, this change is produced in a very few hours. If the syrup be exposed to this degree of heat for ninety hours, it becomes black and acid, and a dark brown powder will be found at the bottom of the vessel.

These changes are much expedited by the presence of an acid, even when its amount is very small; on the contrary, they are retarded by the presence of lime. But if the cane sugar be not pure, if it be combined with glucose even in a minute quantity, lime has a *contrary* effect, and rather hastens than retards them.

The explanation of these phenomena is as follows: The sugar is first converted into glucose by combining with two atoms of water; this change is accelerated by the presence of an acid, which acts in the way formerly mentioned. The glucose in its turn is converted into glucic acid and melasinic acid. Lime or an alkali promotes this result, and when produced, it immediately enters into combination with the newly formed acids. The composition of glucic acid is, as has been shown, $C\ 8, H\ 5, O\ 5 = \text{carbon } 12 + 7.5 \text{ water}$; that of melasinic acid is $C\ 12, H\ 6, O\ 5 = \text{carbon } 12 + 5 \text{ water} + 1 \text{ hydrogen}$.

These changes, therefore, are produced first by the addition to, and subsequently by the subtraction of the elements of water from the original cane sugar of the syrup.

At the temperature of 300° cane sugar melts, and forms, on cooling, a glassy uncrystallized mass, known as barley-sugar. After some time this substance evinces a tendency to crystallize; but if the temperature be continued for seven or eight hours, the properties of the sugar are permanently changed, and its crystallizing power is gone.

When the temperature is raised a few degrees beyond this point, decomposition *visibly* commences, water escapes in the form of vapour, and a dark brown mass remains.

If exposed to a temperature of 400° , the sugar is converted into a blackish-looking substance, which is very soluble in water, and which deliquesces on exposure to the atmosphere. It consists of hydrogen 5.9, oxygen 46.6, carbon 47.5 parts in 100, and consequently corresponds with the formula, carbon 12 + water 9, or the original sugar less two atoms of water. In ordinary language it is said that the sugar which in whole or in part has undergone this change in consequence of its exposure to a too elevated temperature is *carbonized*; an expression sufficiently explicit of the transformation which has taken place.

When the sugar is rapidly heated to 500° or upwards, a black substance, having a bitter sweet taste, is formed; water, the formic and acetic acids, and carbonic oxide, being at the same time evolved. This is the substance known by the name of caramel; it is a compound of sugar which has been more or less altered, ulmic acid (carbon 12 + water 6,) melasinic acid, and charcoal.

Cane sugar, submitted to destructive distillation in a closed retort, emits a large quantity of inflammable gases, and an almost pure carbon or charcoal remains. This, on incineration, leaves a few ashes, which consist of the inorganic salts contained in the sugar.

When a solution of cane sugar is mixed with one of sulphate of copper, if caustic potash be added in excess, a deep blue liquid is produced, which, on the application of heat, undergoes little or no change immediately. But if a solution of glucose, or the sugar of fruits, be treated in a similar manner, on the first application of heat it throws down a copious precipitate of a greenish colour, which rapidly changes to scarlet, and eventually to dark red, leaving merely a colourless liquid above. This is an excellent chemical test for

distinguishing the two varieties of sugar, or discovering an admixture of their solutions.

If a saturated solution of cane sugar be heated, in contact with a quantity of caustic potash, ulmic and formic acids are produced, which unite with the potash and form ulmates and formates of that base. The alkalies and alkaline earths, when added to solutions of cane sugar in smaller quantity, are capable of combining directly with it. From these combinations the sugar is set free in an unchanged state by the addition of any of the weaker acids; even carbonic acid will produce this effect.

The compound of sugar and lime is remarkable for being more soluble in cold water than in hot. It has a bitter taste, and is uncrystallizable.

Sugar also forms compounds with baryta, oxide of lead, and chloride of sodium (common salt). The compound of cane sugar with the last-named substance is one of great importance in the manufacture of sugar; for, according to Peligot, it consists of one part, by weight, of the salt, to six of the sugar, and is so deliquescent, that it renders liquid another portion equal in weight to itself. If, therefore, muscovado sugar contain only 1 per 100 of common salt, we may form an idea of the great injury and loss which must ensue from drainage alone, which will equal 14 per 100 of the whole.

By the action of *diluted* nitric acid, cane sugar is converted into saccharic or oxyhydric acid. If the acid be concentrated, oxalic acid is produced.

Concentrated sulphuric acid decomposes cane sugar into charcoal, water, and acetic acid. When diluted, it converts it into glucose or fruit sugar, as already stated.

Chlorine and muriatic acid gas are absorbed by sugar, which they render brown and clammy.

The vegetable acids render sugar uncrystallizable.

The action of the proteine compounds upon cane sugar have been already stated. We have seen that the contact of these bodies is capable of converting cane sugar into gum, into lactic acid and mannite, into glucose, and finally, into alcohol and carbonic acid; the kind of change depending upon the state of decay of the exciting substance.

When vinegar is added to a solution of cane sugar, and the mixture kept for a length of time at a moderate temperature, the whole will be converted into vinegar, without any sensible fermentation.—The composition of vinegar being carbon 4 + water 3, it follows, that in this conversion one atom of the sugar must produce three of the vinegar or acetic acid, and one of water, which is found to be the case.

Muscovado sugar, of commerce, is sugar in the state in which it arrives from the colonies, in other words, sugar mixed up with variable proportions of foreign matters. According to an analysis made by Avequin, 20 lbs. of badly cured muscovado sugar contained, of silica 414 grains, biphosphate of lime 351 grains, phosphate of lime 300 grains, carbonate of lime 38 grains, organic matter 875 grains,

sulphate of potash 291 grains, chloride of potassium 400 grains, acetate of potash 360 grains, acetate of lime 250 grains; amounting, altogether, to about 3 per cent.

In this analysis, it is not the amount of these matters which strikes us as extraordinary, for that is not greater than the nature of the soil from which this mixture of sugar and molasses was produced would lead us to expect, nor is it greater than what is found in the best kinds of sugar which we receive from the West Indies, but it is the excess of the phosphates of lime in proportion to the quantity of the other salts which renders this result an unusual one.

West India sugars always contain a quantity of insoluble impurities, which are immediately precipitated when the sugar is dissolved in water. They consist of the earthy matters which have adhered to the canes, or broken up woody tissue, of cellulose, and of coagulated albumen. Their combined amount varies from 2 to 6 per cent. the general average being about 3 per cent. The sugar, when deprived of these substances, contains chlorine, acetic acid, and sulphuric acid, lime, potash, soda, alumina, and silica, the collective amounts of which are from 0.5 to 2.5 per cent.

Molasses may be considered to be the mother liquor which is left after the crystallization of cane-syrup. This substance must, consequently, consist of sugar in a state of solution, and of all the soluble matters contained in the cane-juice, which have not remained in the sugar, or which may not have been removed during the process of concentration. Its specific gravity is 1330 or 1340, that is about 38° to 39° Beaumê. Avequin's analysis of molasses obtained from canes grown in Louisiana, gives, as a result from 20 lbs., good crystallizable sugar 15 lbs., salts and organic matter 1 lb., and 4 lbs. of water. The salts he describes as acetate of potash, chloride of potassium, sulphate of potash, biphosphate of lime, silica, and acetate of lime. And the organic matter, gum, or a substance resembling it; which, however, constitutes only $\frac{1}{3}$ of the foreign matters, and but 65 per 100 of the whole. This analysis, however, does not agree exactly with those obtained from molasses produced from canes grown in those islands of the West Indies which have long been cultivated; Barbadoes' molasses, for instance, contain both a much larger quantity of organic matter, precipitable by the diacetate of lead, and a much smaller amount of fixed salts.

Treacle is the ultimate product obtained after the various manipulations to which sugar is submitted by the refiner. It is a viscid and adhesive fluid, of a dark brown colour, approaching to black, and has a specific gravity of about 1330 or 1400, varying from 42° to 44° Beaumê, at the ordinary temperature of England. By evaporation it becomes solid, but in a short time reverts to its original fluid state. It cannot be made to crystallize, but on repose often deposits a small quantity of a light-coloured amorphous sugar. Boiling alcohol separates from it a small quantity of crystallizable sugar, while it at the same time produces the precipitation of a considerable amount of a substance resembling gum. Cold alcohol dissolves from treacle, when dried, a compound of a dark colour, of a sweetish saline taste.

and which is very deliquescent and perfectly uncrystallizable. It appears to be a combination of saline matter and a substance which will be noticed hereafter, and which is known as the "*matière deliquescente*" of Hervey. Besides these bodies, treacle likewise contains a certain amount of uncrystallizable sugar or glucose, a little mannite, and melasinic and ulmic acids, on which its intense colour depends.

The sugar-cane (*saccharum officinarum*) belongs to the graminaceæ or grass tribe of plants, all of which are of endogenous growth, and are generally of very simple structure.

There are many varieties of sugar-cane cultivated in the West Indies, Brazil, Louisiana, and the Mauritius, the principal of which are—1st, the common, or, as it is generally called, the Creole-cane, from having been the one originally introduced into the New World; 2d, the yellow Bourbon; 3d, the yellow Otaheite. The two latter are frequently confounded, and are, at present, probably from the influence of soil and climate, not easily distinguished. The other varieties are—4th, the Otaheite with purple bands; 5th, the purple Otaheite; and 6th, the transparent or ribbon-cane, known by its dark red streaks on a clear waxy-looking ground.

To discuss the merits or demerits of each of them belongs to the province of the agriculturist. We have another object to perform, namely, that of examining their structure and organization; and, as in this respect they are all exactly alike, a description of one is applicable to them all.

The sugar-cane is a perennial plant arriving at maturity, or, more properly speaking, at that stage of its existence when its growth is for a short time suspended, and when it seems to evince a desire to perform another function, that of flowering or fructification, at from eleven to fourteen months after planting. This may be considered a general rule, to which there are numerous exceptions, arising from locality, moisture, soil, atmospheric temperature, &c., &c.

Of all parts of the plant, it is the structure of the stem which offers the greatest interest to the planter, as it is from this part alone that he is able to extract the sugar, the object of all his labours.

A *horizontal* section of a portion of sugar-cane which has arrived at the period of its maturity, placed under the microscope, presents the following appearance. It will be seen that its internal structure consists of a series of cells, generally hexagonal in shape, which touch each other in every direction. They are formed by a thin, delicate tissue, which encloses them, not laterally merely, but both above and below; so that each is perfectly closed and separate from those adjoining. No communications by pores, or otherwise, can be discovered between them when examined under the highest power.

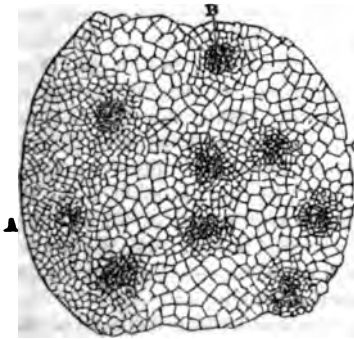
This structure is called the *cellular structure*. It exists in all plants, and the tissue of which it is composed is the one already described as *cellulose*. When the plant is young this tissue is very soft and yielding, but as it advances in age it becomes more firm and

rigid, from the incrustation of its surface by a substance, called by Payen, "*la matière incrustante*."

Interspersed through the structure are a number of vessels running in groups of two, three, or four, each of which is enclosed in a sheath of woody fibre.

Surrounding the whole stem is the cortex or bark, covered by its coating of silica. It is not separable, or indeed scarcely distinguishable from the internal structure just described.

The accompanying sketch will give us an idea of the appearance



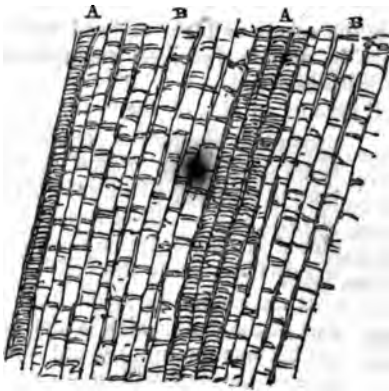
presented by such a section of sugar-cane when placed under the microscope, A being the bark or rind, B a bundle of vessels enclosed in their common sheath of woody fibre, and C the cells.

If the section be made from a part of the cane which is not as yet become mature, the cut surface of the rind will be seen to have a greenish colour, which extends also for a short distance into the cellular tissue. This

green color is owing to the dispersion of a minute quantity of the same matter which gives the colour to the leaves. It is to this substance that those organs owe the property of separating carbonic acid into its two elements, and of eliminating the oxygen. The name of chlorophille has been given to it; and according to Mulder, it consists of carbon 18, hydrogen 9, oxygen 8, and nitrogen 1, in atoms.

A vertical section of a sugar-cane similarly examined, demonstrates a like organization to the one just described. It also permits us to obtain a more distinct notion of the mode of arrangement of the different parts than we could otherwise have. When the plant has acquired a certain age, its vessels are seen to be hidden by the thin surrounding envelope of woody fibre, incrustated with the before-mentioned "*matière*" of Payen, and it is with difficulty that we can procure a distinct view of them. But if we examine a similar section taken from a newly formed joint, into the tissues of which the "*matière incrustante*" has not been deposited, the vessels may be most distinctly seen by the aid of a tolerably good microscope.—They are found running together in bundles of two, three, or four, and preserving a perfectly straight course, parallel to the axis of the stem. They appear to be formed of a succession of rings, and resemble somewhat the windpipes of some animals; hence they have sometimes been denominated annulated vessels, and occasionally tracheæ. They pass directly along the joint from its lower to its upper extremity, without presenting any appearance of anastomosis, or any other communication with each other. At the knot or point of junction of two joints, however, there is a complete lacework of vascular tubes, some of which are curved or looped, others run hor-

izontally towards the periphery of the plant, apparently for the purpose of supplying nourishment to the young bud, while another set seems to communicate by a direct course with those of the joint above.



The adjoining cut presents the appearance presented by a longitudinal section of a newly formed joint when highly magnified. A represents the vessels, and B the cells.

Externally, the knot presents the appearance of a ring. This part marks the point at which the two joints unite: it is studded over with three or four rows of minute points, from one of which may be seen a bud in the act of development. They are the germinal spots of the

plant, and find their analogy in what is called the eye of the potato.

In this neighbourhood, also, may frequently be discovered, in greater or less profusion, a powdery substance of a white or greyish colour. It is wax almost in a state of purity. Avequin has described it under the name of *cerosie*; and he mentions an important peculiarity in connexion with it, namely, that those canes which contain much sugar have little *cerosie*, while, conversely, those which have much *cerosie* have little sugar. That this wax is produced from the saccharine contents of the cane, by a transposition of their ultimate elements similar to those already described, appears very probable; and the experiments of Gundlach tend to show that this change is not an uncommon one in nature. Bees that were fed exclusively upon a solution of sugar-candy in water produced wax. Moreover, Pelouze found that when a strong solution of sugar, mixed with a small quantity of caseine and a little chalk, was exposed for some time to a temperature of 80° or a little higher, a butyrate of lime was produced. The butyric is one of the fatty acids, and is consequently closely allied to wax in its composition. If such a change can be effected by man, it is not assuming too much to attribute a similar one to the operations of nature.

Although the anatomy of the stem of the sugar-cane is, as we have just seen, very simple, the physiology of the plant, that is, a knowledge of the functions performed by each of its organs, and the mode by which these functions are effected, is a subject of considerable difficulty.

I have already stated, that water charged with gas and saline matters is absorbed by the spongioles at the extremities of the root, that it passes upwards through the stem by a combination of actions, as capillary attraction, endosmose, the influence of light and heat, assisted most probably by a vital influence little understood, until it

reaches the leaves, where, under the influence of light, the chlorophyll, or green colouring matter, absorbs carbonic acid from the atmosphere, evolving its oxygen, but fixing the carbon, which is immediately combined with the principles of water contained in the crude sap. From this union a variety of proximate principles may be formed, in each of which the proportion of carbon is greater than the amount of oxygen necessary to convert it into carbonic acid, and in which the respective amounts of hydrogen and oxygen are in the proportion necessary to form water.

A great number of these substances have been enumerated, and the facilities with which they may be converted into each other, either in the laboratory of the chemist, or in the still greater one of nature, has been described. But when our inquiries extend to that series of combinations which succeed each other, or exist simultaneously during the different periods of the life of a plant, from the moment of its first germinating until the time when, after fructification, its juices become almost exhausted; if we ask why, from the sap, sugar is deposited in one part of the plant, starch in another, or some proteine compound in a third, we must confess that our knowledge is exceedingly imperfect.

In the sugar-cane a train of actions, similar to those described as occurring in other plants, is observed to take place. Water, holding in solution carbonic acid, ammoniacal gases, and the saline matters required for the purposes to which they are destined, is absorbed by the roots; it is carried through the stem, and thence to the leaves by the annulated vessels. In this state it is known by the name of crude sap. Arrived at the leaves, the sap undergoes the changes just mentioned, and is in all probability at once converted into cane sugar and water. Whether this really takes place, or whether, from the sap thus changed, the sugar is deposited in the cells of the plant by a process similar to that of secretion, we have no means of ascertaining with certainty. Of this we are, however, assured, that the vessels contain a fluid, consisting for the most part of crude and unassimilated substances, whilst in the cells is found a solution of sugar and water, in all probability free from any admixture of foreign matters.

During life there appears to be going on a constant exchange of principles between the contents of the cells and those of the vessels, by means of endosmose and exosmose. The cells absorb a portion of the water contained in the sap-vessels, by which the crystallization of their saccharine contents is prevented; and they in return give to the sap a certain amount of their sugar, which increases its richness and nourishing properties.

The crude sap of the sugar-cane has never been analyzed, but there is every reason to believe that it has a composition similar to that of other plants. According to Vauquelin, the sap of plants consists of extractive matter containing ammonia—a compound of *proteine*; a mucilaginous substance—*dextrine*; water and salts, which vary in each species. It has been stated that plants have, to a certain extent only, the power of selecting the substances with which their roots may be in contact; therefore the sap of a plant may con-

tain at one time, matters foreign to its natural constitution, which will not, consequently, be generally found in another of the same species, but placed under other circumstances.

When any of the more perfectly soluble saline principles of a plant are found existing in the soil in an unusual quantity, we may expect to find them in the sap of vegetables cultivated on such a soil more than usually abundant. In these respects the sugar-cane does not differ from other vegetables; *foreign* matters are occasionally found in its sap, and still more frequently an excess of one or other of its saline constituents.

The contents of the cells are composed of much fewer materials than those of the vessels, consisting almost entirely of sugar and water. Whether any other substances are ever associated with these two is at present unknown; but if we can form an opinion from what takes place in a few other plants, which present close analogies in this respect to the sugar-cane, we must conclude that such is not the case. It is certain, also, that if any other substances be present, their amount is exceedingly small.

We also have a right to conclude, from a similar method of reasoning, that the sugar contained within the cells of the sugar-cane performs the same office as the starch which is deposited in the roots and pith of plants of other species, namely, that of affording nourishment when the future exigencies of the plant may require it. When the sugar-cane is vegetating in all its luxuriousness, when joint upon joint is quickly being added; or when, from an excess of vigour, new buds are sprouting from almost every joint, the contents of the cells consist of little more than water, the sugar being absorbed as quickly as it is deposited, to serve for the formation of the new tissues. When, on the other hand, time and a favourable season have conducted the plant to that stage of its existence which has been expressed by the term "maturity,"—when, for a time at least, its growth and development have ceased, in preparation for the performance of another function, the contents of the cells abound in their saccharine constituents. This condition of the sugar-cane is accompanied by a diminution of the quantity of the sap, and by a slowness in its rise; it is therefore the one best suited for the purposes of the manufacturer.

Cane-juice is the fluid obtained from the cane by a degree of pressure sufficient to lacerate and break to pieces its entire structure; it must therefore consist of a mixture of those two fluids, so different in their composition. How essential is it, therefore, to attend to these circumstances, and rather suit the crop time to the cane, than, as is too frequently the case at present, suit the cane to the crop time.

When a portion of sugar-cane, cut into thin slices and dried, is infused in cold alcohol, a peculiar substance remains in solution, which is obtained on evaporation. It is neither sakt nor sweet to the taste, is uncrystallizable, and highly deliquescent. It is the "*matière deliquescente*" of Hervey; its composition is unknown.

The saline matters found in the sugar-cane consist of acetates of lime and potash, the malates of lime and potash; the chlorides of

sodium and potassium, the sulphates of potash and lime, carbonate of lime, phosphate of lime, silica, and alumina. Their amount differs materially in the various parts of the plant. The leaves contain about 4 per 100, but the stem rarely more than from 0.4 to 0.6 per 100 of these inorganic substances.

Cane-juice.—The term cane-juice is, as just stated, applied to the compound fluid derived from the cane by means of powerful pressure; it must, therefore, consist of many other substances besides sugar and water.

When recently expressed, it is opaque, frothy, and of a yellowish green, or sometimes greyish colour. It has an aromatic and sweet taste, and balsamic smell, and produces a slightly acid reaction on litmus paper. In the latter respect it offers considerable variations. Its specific gravity is said to vary from 1046 to 1110, from 7° to 15° Beaumé. These must, however, be considered as its extreme limits, which are very rarely observed. I have never seen it in any country of a density below 8.5° nor higher than 13°, the temperature being 80°. Its specific gravity usually fluctuates between 1070 and 1090, 10° and 13° Beaumé. The difference in density depends upon many causes, as the age of the cane, the climate, the soil, the season, the temperature of the atmosphere, &c.

Cane-juice consists of two parts, easily separated from each other by filtration, the one being a perfectly transparent fluid of a pale yellow colour, the other a dark green fecula, which remains upon the filter.

The latter, upon examination under the microscope, is seen to be formed of a green globular matter—chlorophille, portions of woody fibre, cellulose in the state of the broken-up parietes of the cells, and a few shreds of coagulated fibrine. By the application of heat, and the addition of a small quantity of lime, these substances separate readily from the pure juice, and then constitute the *scum of the clarifiers*. This scum has been analysed by Avequin, who states that it consists of cerosie or wax 7.5, green matter 1.3, albumen and wood 3.4, biphosphate of lime 0.5, silica 2.1, and water.

The transparent liquid which remains when the above matters have been separated by filtration, consists of water, sugar, a small quantity of dextrine, varying, probably, from 1 to 4 parts in 1000 in ripe and healthy canes, soluble compounds of proteine, saline matters, and a colouring principle, distinct from the green matter mentioned above, being soluble in water.

On a small quantity of filtered cane-juice being placed under the receiver of an air-pump, and allowed to remain there until all evaporation had ceased, a thick yellow syrup was produced which obstinately refused to crystallize. But on the addition of a little alcohol, crystallization took place on further evaporation.

This experiment was performed by Peligot; it has been repeated by me with a similar result.

* In Louisiana we find it sometimes as low as 4½ and 5½ of Beaumé, we are informed—[Ed.]

When a portion of cane-juice, treated as before, that is, carefully filtered, is exposed in a glass vessel to the action of heat, it gradually loses its transparency, becomes cloudy, and, on ebullition, thin, flocculent particles of albumen make their appearance, which, on removal of the liquid from the heat, fall to the bottom of the vessel in the form of a white precipitate. If the liquid be deprived of these flocculent particles, and then evaporated in vacuo at the ordinary temperature of the atmosphere, crystallization will ensue, but not so completely as in the first experiment, a portion of it remaining in the state of thick syrup.

If a portion of filtered cane-juice be evaporated in a shallow vessel over a sand-bath, at a temperature varying from 180° to 200° , until it assumes the form of an inspissated syrup, partial but slow crystallization will take place, the crystalline substance amounting to about one-third of the syrup. On submitting the latter to a further evaporation in a similar manner, a very small amount of ill-defined crystals are produced.

These experiments teach us,—1. That cane-juice, without the addition of any foreign matter, when its water is evaporated at the ordinary temperature of the atmosphere, does not produce crystals of sugar. 2. That when it is exposed to a temperature a little below that of boiling water for the purpose of concentration, crystallization of a part, but not of the whole, of its sugar takes place. 3. That on the addition of alcohol to the concentrated syrup, nearly the whole of it is converted into a solid crystalline mass on further evaporation.

We can explain the action of the heat and the alcohol in the above experiments only in two ways, namely, that some chemical or chemico-electrical change has been effected on the sugar by the agency of those bodies; or that they have separated from the cane-juice a substance, owing to the presence of which the sugar did not evince its inherent crystallizing property. The latter is the effect which has taken place. The substances contained in the cane-juice, besides the sugar and the water, are dextrine, the proteine compounds, and the salts. Of these, the only one which is equally acted upon by both alcohol and heat, is the proteine compound called vegetable albumen; the other organic substances are unaffected by the degree of heat employed in the experiments, but alcohol coagulates them all.

If cane-juice, merely filtered as above described, be allowed to remain at rest for a short time, it gradually becomes viscid and loses its transparency, a portion of its sugar having been converted into gum. The *viscous* fermentation has commenced. Should the temperature of the atmosphere not exceed 60° or 65° , as is the case in the Island of Madeira during the months of January or February, this change may go on until the whole of the sugar disappears.

When such is the case, the character of the cane-juice is entirely destroyed. It now presents the appearance of a viscid mucilaginous liquid, which possesses neither sweetness nor acidity, and which is *incapable* of undergoing the vinous fermentation.

Within the tropics this transformation is never complete; for, owing to the high temperature which exists there, the viscous fermentation no sooner commences than it is followed by another, which soon supersedes it, and which gradually converts the cane-juice into a liquid possessing a sour taste, and a smell somewhat approaching to bad vinegar. This is the lactic acid fermentation, the cause of so much mischief when it is allowed to take place.

The establishment of these two changes does not altogether prevent the partial development of a third, in countries where the causes which excite them are so redundant as they are in the West Indies. Indeed they are almost always accompanied in a slight degree by the vinous fermentation, the alcohol resulting from which is, as soon as formed, converted into vinegar. So that the *souring* of cane-juice is not always exclusively owing to the development of lactic acid, but is often dependent upon, to a greater or less degree, the formation of acetic acid also.

These changes are likewise accompanied by the formation of a small quantity of mannite.

When cane-juice, which has already been boiled and filtered, is submitted to the action of heat a second time, the flocculent particles which separated from the liquid during the first ebullition are not now observed, but in place of them a thin film is seen to form on the surface. A similar effect is produced in all liquids which contain caseine in solution. We have a familiar instance of this in boiling milk. It has been already stated that caseine is one of the proteine compounds found in cane-juice, in which it is held in solution by the presence of a vegetable acid or acid salt, in the same way as it is found combined in the juice of the grape. As caseine cannot be separated from its solutions by heat alone, it is evident that when this agent is the only one to the action of which cane-juice has been submitted, the caseine must still remain dissolved in it in its original quantity. Syrups prepared from cane-juice thus treated undergo a partial crystallization only, and are very much disposed to run into one or more of the varieties of fermentation just alluded to.

Boiled cane-juice likewise changes its chemical character with great rapidity, the three varieties of fermentation taking place in it simultaneously; but while the viscous and lactic acid fermentations predominated, as we have seen in the juice which has not been exposed to heat, in this the vinous fermentation is the one which is most active.

Caseine is, as has been already stated, insoluble in pure water; but when the water is acidulated by the addition of any of the vegetable acids or acid salts, or when it is rendered alkaline by a small quantity of potash, soda, or lime, it becomes in both cases a solvent of this principle. In the one it is separated from its solution by the addition of an acid, in the other by that of an alkali, *provided that neither be added in excess, otherwise it is first precipitated, and afterwards re-dissolved*. We can thus explain the necessity for the employment of lime in the defecation or clarification of cane-juice.

When defecated by the employment of lime, cane-juice may be made to crystallize almost entirely on due evaporation at a high temperature. In this state also it runs rapidly into the vinous fermentation; and if the other two varieties are occasionally found to accompany the former, it is at the most to a very small extent.

The nature of the change produced in sugar by its conversion into the products of the vinous fermentation, is explained as follows: When a small quantity of yeast has been introduced into a solution of cane-sugar, and again separated from it by means of filtration, the sugar will be found to have undergone a change, it will not crystallize on evaporation; and on analysis it is seen that it has been converted into glucose. If the yeast be allowed to remain a short time longer, the vinous fermentation will commence. This consists in the conversion of 1 atom of glucose into 2 atoms of alcohol, 4 atoms of carbonic acid, and 2 atoms of water, thus:

	Carb.	Hyd.	Oxyg.
2 atoms of alcohol, - - -	= 8	12	4
4 atoms of carbonic acid, - -	= 4	0	8
2 atoms of water, - - -	= 0	2	2
1 atom of glucose, - -	= 12	14	14

It is frequently stated, that an incipient degree of the vinous fermentation in syrup is rather beneficial than otherwise, by augmenting its granulating properties. This statement is probably true to a limited extent. We can understand that the formation of a small amount of alcohol may be accompanied by the coagulation and precipitation of a small quantity of some foreign organic substance, the presence of which may enfeeble somewhat the crystallizing power of the sugar. But these results would be more than compensated by the conversion of a part of the sugar into glucose, entailing a loss in the quantity of crystallized sugar that would be obtained.

The fact that fermentation may take place in cane-juice, after its defecation by lime and heat, would indicate that these two agents are insufficient to remove all the proteine compounds or ferments from it; and such is the case, for on the addition of a little diacetate of lead to cane-juice, which has been treated in that manner, a copious precipitate results, which, on the application of heat, emits ammonia.

The hydrates of metallic oxydes when in a nascent state, alumina, and infusion of galls, have a similar, although less powerful, action than the diacetate of lead.

The practical inference to be drawn from the foregoing remarks, is the necessity of removing as completely as possible the azotised principles from the cane-juice, as by their prolonged contact the latter will inevitably undergo, during the different stages of its concentration, one or other of the catalytic changes above mentioned. But besides these effects, their presence, probably assisted by that of a small quantity of dextrine, tends powerfully to prevent the crystallization of the syrup.

As there are certain substances which have the property of checking or preventing the various fermentations to which cane-juice is liable, the occasional employment of them has been recommended. They consist, for the most part, of sulphurous acid united to a base, such as zinc or lime for instance. In a well managed boiling-house they will never be required; and it would be needless to say, that in sugar-making, as in other arts, that which is not required should not be employed.

The *saline matters* found in cane-juice consist of those which are peculiar to the plant, and which are more or less soluble in water; they are the chlorides of sodium and potassium, sulphates of potash and lime, bisilicate of potash, alumina, a trace of iron, and a little biphosphate of lime. Besides these, there are also one or two organic acids combined with one or more of the above bases; but their nature has not as yet been very clearly made out.

The aggregate amount of these substances, as might be supposed, varies considerably. It usually, however, constitutes from 2 to 4 parts in 1,000 of cane-juice; but sometimes it would appear to be greater. This variation in quantity is owing to the nature of the soil on which the cane is grown. The excess is caused either by the introduction of a foreign salt, or by the great preponderance of one of those which are essential to the composition of the plant.

Although the quantity of saline matters contained in cane-juice may at first appear to be small, we must remember, that as the concentration of this liquid goes forward, the ratio between them and the other constituents becomes far less disproportionate. Let us suppose that the evaporation of cane-juice containing only 2 parts of these substances in 1,000 be such as to produce a syrup equal to $\frac{1}{4}$ of its original weight, it is clear that the syrup must contain of them 1.2 per cent. I have already stated, on the authority of Peligot, who has given much attention to this subject, that one part of the chloride of sodium will combine with nearly six times its bulk of sugar, and form a deliquescent compound, which is capable of liquefying another portion of sugar equal to itself in *bulk*. It is also very probable that the other saline constituents may likewise form similar combinations. Their presence, therefore, must always be considered injurious.

We possess no means of getting rid of these matters when once present; we should, therefore, prevent their introduction into the cane by draining the soil. This induces me to mention a cause of injury both to the vegetation of the canes and to the cane-juice obtained from them, not unfrequent in some of the West India islands.

Many of those islands, as is well known, are of volcanic origin, and their soils, particularly in certain localities, contain in large quantities a compound of two atoms of sulphur and one of iron, known by the name of iron pyrites. When this substance is exposed to the air, it is slowly converted to sulphate of iron and sulphuric acid, which remain in solution in the undrained water, rendering it sour and very detrimental to the roots of the canes. Again, when this sour liquid is in contact with vegetable matter, and when the

air is excluded, as it is when this liquid percolates through a deep stratum of alluvial soil, it parts with oxygen to the decaying vegetable matters, and is again converted into iron pyrites. From these soils, also, sulphuretted hydrogen gas is often emitted, in considerable abundance, which, in addition to the evil effects that its presence produces on plants, renders such localities extremely insalubrious to man. By drainage and a proper method of agricultural treatment, both these evils may be remedied, and estates which are at present almost uninhabitable, may be rendered comparatively salubrious, and their produce improved both in quantity and quality.

The relative amount in which the substances which have been described enter into the composition of cane-juice, under ordinary circumstances may, from an average taken from numerous experiments made by different persons, be expressed as follows :—

Water.....	81
Sugar.....	18.20
Organic matter, precipitated by diacetate of lead.....	0.45
Saline matter.....	0.35
	100-

The accuracy of this formula is supported by a great uniformity in results, obtained under a variety of circumstances, and, were it necessary, could be confirmed by my own observations; but it is obvious from what has been previously stated, that cane-juice must offer considerable modifications in this respect, arising from the age of the plant, from climate, from soil, &c.

Peligot remarks, "that when the amount of foreign matter, such as the organic azotised principles, salts, &c., contained in cane-juice in the proportions given above, be compared with that which exists in the juice of the beet-root, the former may be considered as a fluid of almost perfect purity; that it may be regarded, indeed, as a solution of sugar and water."

It is true that cane-juice contains both a larger quantity of sugar, and, also, a considerably less quantity of foreign matters than the juice of the beet-root, and is, therefore, less prone to undergo the changes which the presence of those bodies promotes under the same circumstances. But it must be remembered, that the cane-juice in the West Indies is, at the moment of its expression, submitted to the action of an atmosphere, the temperature of which is from 80° to 85°, while the temperature of the atmosphere in France, at the season when the beet-root is best fitted for the purpose of sugar-making, rarely exceeds, and is not often so high as 50°. This difference of atmospheric temperature in two cases tends much to the equalization of their respective chances of fermentation.

Many circumstances will disturb the amount of each of the constituents of cane-juice. Probably in no two colonies is the cane-juice precisely alike in this respect. But there are causes common to all, and which being always in operation in a greater or less degree, prevent the cane-juice of one year resembling in all respects that of another, although both may be the produce of the same estate.

The planter necessarily strives to cut his canes at the period of their greatest maturity; but a variety of circumstances often prevents the accomplishment of his wish. During the days of slavery the reaping of the crops always required a space of time equal to four months for its accomplishment; at present, from the want of labor experienced in all the colonies, this period is considerably extended. In so long a lapse of time many changes may take place in the weather, which set all his calculations at defiance; for instance, renewed vegetation of the canes may commence, and then the character of their juice will be materially changed.

There are certain lands on which the canes never appear to ripen; they remain large, green, and watery; and except after a long continuance of dry weather, they are little disposed to arrow. Canes of this kind are invariably found growing in soils abounding in saline matters, which act as a powerful stimulus to the *growth* of the plant, but which, in an almost equal degree, tend to prevent the deposition of sugar in its cells. Such soils are either those in which drainage is urgently required, or they are virgin lands recently brought into cultivation, and rendered preternaturally saline by the burning of the vegetation which had previously sprung up from them. The juice obtained from canes that have been cultivated under these circumstances is the cause of great embarrassment to the sugar-boiler. In the first place, it often requires an unusually large quantity of lime for its perfect defecation. It is dark in color, and its ebullition is difficult and irregular. On the continued application of heat it becomes viscid, its color becomes deeper, and on further evaporation of its water it is very liable to burn.

The inspissated syrup obtained from it granulates imperfectly, and the sugar is dark in color, soft, and pasty. The molasses are too abundant, nevertheless they leave the sugar so slowly, that the drainage seems interminable.

On the other hand, should an alteration of sunshine and rain, which for the space of five or six months has induced a luxuriant vegetation in the plants and ratoons, be followed by a long continued drought, their growth will be prematurely checked, and they will often, under these circumstances, show a disposition to arrow. Should they now be cut, the juice will probably be found of a good quality, and easily made into sugar, the only attendant evil being its deficiency in quantity, owing to the small size which the canes have attained. In such cases it might be thought advisable to cut the canes rather than to permit them to remain on the soil, with a risk of the cessation of vegetation. Such a course is often impracticable, for the estate is not yet prepared for it; even if it were, the planter would not be justified in running so great a risk of a change in the weather at a season when long experience has taught him to expect it, and thus to jeopardise the whole of his year's labor; for with a return of rain vegetation would immediately commence, and then to the evil of having canes of unusual shortness would be added that of a juice poor in saccharine matter.

Should the drought commence a short time only before the season for commencing crop—that is, when the canes have attained their ordinary growth, the effect is an eminently beneficial one, for it consists of an inspissation of the saccharine contents of the cells by the exhalation and evaporation of their water, and it is at the same time accompanied by a diminution in the quantity of that fluid which has been described above as the sap. Cane-juice under such circumstances has a considerable density, and is often of great purity, so that, during and after its concentration, the sugar, to use a common expression, makes itself.

But if the drought, at whatever age of the cane it may have commenced, should continue beyond the time necessary to produce the effects above mentioned, the leaves of the plant turn yellow, the stem becomes red, and has a scorched appearance, and not unfrequently splits, or becomes hollow from a contraction of its cellular structure. The canes then are said to be *burnt*. The juice thence obtained is generally deficient in quantity, and its quality is considerably altered. In extreme cases it is strongly acid; in this respect it varies much, but it always requires a large quantity of lime for its neutralization, while the addition of this substance to it is destructive in its effects. On the application of heat it becomes rapidly darker in color, it boils unequally and lazily, is very apt to burn, and the syrup refuses to crystallize. The reader is now, I trust, able to understand the nature of the change that has resulted in these cases. In consequence of injury that the structure of the stem has suffered, the liquid contents of the different organs have been mingled, the azotised matters have acted as fermentative agents, and the sugar in whole or in part has been converted into gum, glucose, and lactic acid, the one or the other of them predominating in different cases.

A similar result, but arising from another cause, is of common occurrence in Louisiana. In that country the frost not unfrequently sets in before the canes are ready to be cut. The frost causes an expansion of the fluids, and a rupture of the organs which contain them. An intermixture of the saccharine and nitrogenized principles consequently ensues. Should the frost continue, no evil results are observed, for at such a temperature catalysis is prevented; but should a thaw succeed, the cane-juice becomes viscid and mucilaginous, the syrups resulting from it will not crystallize, and the only use to which they can be applied is that of distillation.

The effects produced on the cane-juices by the borer, by rats, and by all mechanical injuries, are explained on similar principles.

ART. II.—BRITISH AMERICA.

EXTENT OF BRITISH AMERICA.—PROGRESS OF LIBERAL PRINCIPLES.—
DESTINIES.—UPPER AND LOWER CANADA.—NEW-BRUNSWICK.—
NOVA SCOTIA.—NEWFOUNDLAND.—NEW-BRITAIN, ETC.

THE present paper comprises another of the series promised upon the various geographical divisions of the Western world; and the reader will find advantage in consulting them together in the volumes we have published and are now publishing.*

British America is in extent equal to about one-third of the whole continent, and is limited by the possessions of Russia on the 141^o of longitude, and all other points by those of the United States. The islands of the Arctic sea, and along the Atlantic coast, are claimed as a part of the same empire; and the late treaty negotiations have settled the long agitated Maine and Oregon boundaries.

The northern regions of British America possess no agricultural capacities, but are locked up in frosts and perpetual snows. The fur trade can alone be prosecuted. To the south, the climate becomes genial and the soil fertile. Immense forests prevail here.

British America offers perfect relief, says Mr. Gesner, in his late work upon New-Brunswick, to the overflowing population of the mother-country, whose manufacturing districts and most productive counties have become so overloaded with the humble classes, that the least disturbance in the state of trade produces the greatest degree of misery and crime.

In the same connection Mr. Alison, in his work on Population, remarks:—Nor is there any chance of this prodigious opening for labor in Australia and our North American colonies, being either diminished or lost to this country, except by the folly of internal legislation. The productive land in Canada and New-Holland, exceeds that of all Europe put together. It is so intersected by water through the great chain of the lakes, which flows through its centre, that hardly any part of it is fifty miles from inland navigation, and an immense tract lies on the shores of vast navigable rivers or stupendous inland seas. The climate, severe in Lower, is much more mild in Upper Canada; the vine, the apricot, peach and nectarine, ripen in the open air. The soil is so rich from the falling of leaves during many thousand winters, that it bears the finest wheat crops for three years, without manure. The invention of steam has facilitated indefinitely both the means of getting at this fertile district, and the market for its produce when cultivation has commenced. Nothing is wanted but hands to clear the vast tracts of wood-encumbered plains, and that is precisely what England possesses to superfluity.

* In the preparation of this article, we are much indebted to the volumes of Mr. Simmonds' Colonial Magazine, published in London—a work which should be more extensively patronized in this country.

The possession of this immense country can in no other sense be considered important to Great Britain, than in offering a vent to her rapidly augmenting population. From its trade and commerce, in consequence of her systems of exclusion and restrictions, she has perhaps obtained less advantage than the continual outlay which has been every year required. One has not to be a deep observer, to mark at a glance the comparative progress of the regions on either side of the St. Lawrence, and there can be no other manner of accounting for it, than the spirit of liberty and attendant enterprise which exist upon the one hand. With equal liberality of laws and government, a very different state of things might early be predicated.

Nor are we to suppose the old colonial policy existing in its full force in British America. Many and marked improvements have been demanded and made since the independence of the American states. The contagion of free institutions is not easily arrested, and a careful study of the colonies now under consideration, will show that they have been gradually gaining power at the expense of the mother-country, and that the concessions made them from time to time, would have been considered treason to demand at the close of the last century.* The influence of the United States is felt all through the British colonies in *their amelioration*. This we regard the high, holy and peaceful mission of America. We ask no other conquests! Let our neighbors regulate their own affairs in the manner best suitable to them, so long as there shall be no interference with ours. If a "manifest destiny" decree all America to us, it is well to wait the falling of the ripe fruit without agency of ours. A better policy would be—"hold, enough!"

British America embraces a territory equal in extent to two-thirds of the whole of Europe. It is divided into the provinces of Canada, (Lower and Upper,) New-Brunswick, Nova Scotia and Newfoundland, and New-Britain,—the latter a cold and barren country, between Hudson's Bay and the Pacific, thinly inhabited by Esquimaux and other savages.†

The following table shows the area in square miles and population of each, so far as has been specifically ascertained :

* A well-informed writer, in the last number of the North American Review, July, 1848, shows in strong colors the progress of liberalism in the British colonies. The descendants of the Tories of our revolution who removed to these points, demand yet more than did the Whigs of that period, whom they stigmatised as rebels and traitors. Some of the ablest men in the British colonies are of this class. "What do we see," asks the Review, "after the lapse of nine years? The popular will having wholly wrested away the prerogative, now breaks up cabinets and displaces the highest functionaries, without check, accountability or control. We see, too, a minister of the Crown conceding, in express terms, that such a power seems to be a necessary part of representative institutions in a certain state of their progress! If a single Whig of 1776, in his loftiest mood, even so much as dreamed of obtaining a concession like this, we have yet to be informed of it."

† Labrador, Cape Breton, Prince Edward's Island, Anticosti, may be considered embraced.

	Square Miles.	Population.	Pop. to Sq. Mile.
Lower Canada.....	194,000	700,000	3
Upper Canada.....	150,000	600,000	4
New Brunswick.....	27,700	180,000	6
Nova Scotia.....	17,000	350,000	18
Newfoundland.....	50,000	100,000	2
New-Britain.....	1,861,300	—	—
Total.....	2,300,000	1,930,000	1

Sebastian Cabot is said to have first discovered Canada in 1497. The French prepared a map of the Gulf of St. Lawrence in 1508, and in 1525 took possession of the country in the name of the king of France. Quebec, the first settlement, was not founded till 1608; after which period the colonists were much annoyed by the native Indian tribes. A friendly compact, however, was ultimately made, and they became auxiliaries against the British. In 1759, Quebec was taken by the British forces under Gen. Wolfe, and the whole territory ceded to Great Britain by the treaty of Paris, 1763. The seigniorial rights, the various holdings and tenures under them, and the endowments of the Catholic Church, were left undisturbed; and all the estates, including the unappropriated lands in the provinces, held at the period by the French king, became vested in the British crown. Here began British rule and colonization north of the great American lakes.

We shall notice the provinces separately in the order named in the table.

LOWER CANADA.—More than two-thirds of the population are of French origin, speak the French language, and profess the Roman Catholic religion. The chief settlements are in the valley of the St. Lawrence, between Montreal and Quebec, a distance of one hundred and fifty or two hundred miles. The following statement exhibits the quantity of lands surveyed, value, &c.:

	Acres.
Jesuits estates not appropriated.....	664,000
Indian Reservations and St. Maurice.....	87,000
Seigniorial tenures granted to individuals.....	7,496,000
Free and common socage granted to individuals.....	3,847,629
Included in the above.....	1,684,233
On hand.....	3,907,000

Unsurveyed..... 16,934,862
107,856,000

Income from the Territorial Fund in 1843, was *\$136,000; in 1844, \$25,900; due for the sale of Crown lands, \$269,600.

Of the surveyed lands, 3,907,000 acres are unappropriated; from which \$592,293 in government scrip, at the valuation of \$1 per acre, must be deducted:

3,314,707 acres, valued by Surveyor General at 60 cents.....	\$2,071,620
8,500,000 unsurveyed, in rear of townships.....	5,312,500
6,000,000 north-east part of dist. of Quebec.....	4,500,000
750,000 south-east sect. of St. Francis, &c.....	750,000

Land Fund..... \$12,634,190
Which, if invested at 5 per cent. will yield..... 631,799

* The sterling has been turned into federal money, waiving fractions, as more satisfactory to our readers.

This revenue is charged with about \$150,000 to common schools, and \$20,000 annuity to the Indian tribes.

From an official report in 1845, we collect the following:

Houses inhabited, 106,803; vacant, 4,041; now being built, 1,613;—112,487.

Heads of families, 121,441, of whom 76,032 are proprietors of real estate; 37,113 non-proprietors, and 8,296 having votes in towns, &c.

Total resident population, 687,175: of which there are natives of England, 11,886; Ireland, 44,012; Scotland, 13,341; Canada, of French origin, 518,565; Canada, of British origin, 85,075; continental Europe, or otherwise, 2,353; United States, 11,943; aliens not naturalised, 1,505; total, males over 15 years of age, 186,548; females, 188,954; under 15, males, 158,447; females, 157,344. Of those under age, there are 2,111 males married, and 6,705 females married; being a total of 8,816 married minors.

Deaf and dumb persons, 725, of which 447 are males, and 278 females; blind, 523: males, 273; females, 250; idiots, 950: males, 478; females, 472; lunatics, 308: males, 156; females, 152;—total, 2,506.

The proportion of deaf and dumb in Canada to the whole population is as one to about 957, a greater proportion than prevails throughout all Europe, (1 in 1,537,) and the United States, (1 in 2,000,) or the whole world, (1 in 1,556,) and is only exceeded by the solitary cases of Switzerland and Baden, where the proportion is respectively 1 in 503 and 559.

In the whole province there are only 261 persons of color: 140 males, and 121 females.

The Church of Rome has 571,714 of the population within its pale, leaving a fragment for the other fourteen religious sects, the principal of which, in numbers, are the Church of England, 43,274; Scotland, 26,725; Methodist, 15,853; Presbyterian generally, 5,231; Baptist, 4,067.

Occupations are thus stated: Male farm servants, 5,967; other male servants, 5,390; female servants, 11,510; engaged in trade and commerce, 3,739; paupers, 463.

Of the soil, the occupied acres are 7,540,450, of which 3,083,949 are under cultivation, and 4,456,400 not under cultivation.

The produce of the year 1843 was:—Wheat, 914,909 bushels; barley, 1,221,710; rye, 310,458; oats, 6,688,933; peas, 1,428,303; Indian corn, 143,947; buckwheat, 375,744; potatoes, 9,914,639.—Total, 21,365,913 Winchester bushels.

There are 1,629 educational establishments, including 63 colleges, academies and convents. In all, 56,578 pupils are taught; 31,432 males, and 25,146 females.

The shipping of Quebec, in 1844, consisted of 509 vessels, with a tonnage of 45,351, manned by 2,590 men; that of Montreal at 60 vessels, tonnage 10,097, and 556 men.

Of manufactories, there are 417 grist mills, with 849 run of stones; oat-meal, 111; barley, 48; saw, 895; oil, 30; fulling, 155;

carding, 165; thrashing, 451; paper, 7; iron-works, 79; trip-hammers, 18; nail factories, 7; distilleries, 37; brewing, 29; tanneries, 325; pot and pearl asheries, 423; all other manufactories, 136.—Total 3,333.

The rate of wages of common laborers, for corporation work, is 60 cents per day, and for canal, 75. Mechanics and artisans usually receive in Montreal—masons from \$1.25 to \$1.75 per day; plasterers, \$1.50 to \$2; bricklayers, \$1.62; painters, \$1.62; carpenters \$1.25 to \$1.62.

The *Montreal Transcript*, encouraging foreign labor to try its fortunes in Canada, says:

“Our opinion is, that the condition of every industrious mechanic and laborer must be improved by emigration to this colony. There is more elbow-room here—a wider field for energy and exertion. There is above all, more to hope for. No man need sit down in gloomy despair, toiling on from day to day, and week to week, without the slightest prospect of ameliorating his condition. There is none of that horrible uncertainty—that wavering between starvation and the dread of the workhouse which depresses hundreds of thousands of human beings at home. To the honest, the sober and industrious, the present is more pleasing and the future more bright.”

The project of a railroad from the Canada line to Portland, Me., 124 miles, has been introduced, upon estimates of \$2,500,000; but the success of enterprises of this kind, in so cold a climate, is much doubted. Mr. Hall says of Canada:—

“I find that falls of snow are frequent in that region—that the quantity of snow on the ground in the winter season varies from two to three feet in depth, but very seldom equals three feet. The snows are light and dry, unaccompanied by rain or sleet moisture. It is the damp, heavy snows, sleet, and frozen rains, which create so much difficulty, and constitute so serious an obstacle to the operations of a railroad. A light, dry snow, of any depth that is known to fall in any one storm, is easily removed by the snow-plough now in use. On the seaboard, and farther south, the snow and sleet in their season are occasionally serious obstacles; but the further you go north, and the further you recede from the seaboard, the drier and lighter the snow, and the less the difficulty in removing it from the track.”

TRADE OF QUEBEC AND MONTREAL.

Without extending general remarks, we close our statistics of Lower Canada, by a glance at its productions and commerce. The following is a table of the exports by sea, of wheat, flour, oats, and peas, from Montreal and Quebec, for nine years:—

Years.	Flour. Bbls.	Wheat. Bush.	Oats. Bush.	Peas. Bush.	Years.	Flour. Bbls.	Wheat. Bush.	Oats. Bush.	Peas. Bush.
1838..	59,204..	—	—	..1,415	1843..	209,957..	144,233..	3,651..	88,318
1839..	48,427..	..3,330..	—	..2,855	1844..	415,467..	282,183..	24,574..	130,355
1840..	315,612..	..142,059..	—	..59,878	1845..	442,228..	396,252..	53,530..	220,912
1841..	856,210..	..562,862..	—	..123,574	1846..	555,602..	534,747..	46,060..	216,339
1842..	294,799..	..204,107..	..5,666..	..78,985					

During the year 1846, 30 vessels, with a tonnage of 19,761, were built at Quebec.

The lumber trade forms a considerable item, as will appear by the following statement of timber measured at Quebec, in the last three years:—

	1845.	1846.	1847.
White Pine.....feet.....	19,111,455.....	24,504,375.....	12,026,294
Red Pine....."	4,444,515.....	5,247,754.....	6,516,922
Oak....."	1,800,446.....	2,429,582.....	3,484,569
Elm....."	1,566,915.....	3,455,132.....	2,035,541
Ash....."	412,096.....	260,088.....	122,715
Basswood....."	37,086.....	82,798.....	12,693
Butternut....."	9,664.....	20,782.....	6,618
Tamarac....."	199,933.....	593,584.....	590,619
Birch and Maple....."	160,007.....	240,787.....	92,237

Value of exports at Quebec, 1847, \$7,067,900; imports, \$3,062,800. Value of imports at Montreal, 1847, \$3,479,800, being a decrease of \$988,170 from the previous year's imports. Of British manufactures imported, the decrease has been \$1,140,000, while the value of foreign goods imported has increased \$352,000. The exports from Montreal show an increase in 1847 over the previous year, of \$683,000.

PRINCIPAL ARTICLES EXPORTED FROM MONTREAL, 1847.

Ashes—Pot.....bbls.....	11,111	Honey.....casks.....	9
" Pearl....."	4,017	Honey.....bxs.....	26
Apples....."	297	Honey.....cases.....	2
Alc.....hhds.....	2	Lard.....kegs.....	205
Barley.....minots.....	22,847	Linseed.....bbls.....	624
Beef.....tcs.....	89	Indian Meal....."	2,621
Beans.....minots.....	1,587	Oat Meal....."	10,843
Butter.....kegs.....	12,213	Oats.....minots.....	146,154
Cheese.....pkgs.....	261	Pork.....bbls.....	2,010
Corn, Indian.....minots.....	14,511	Peas.....bush.....	9,046
Glass.....bxs.....	370	Seed, Grass.....bbls.....	300
Flour.....bbls.....	281,099	Wheat.....minots.....	1,067,967

The foreign silk trade for 1847 shows a total of imports of 4,425,696 lbs.; consumption, 4,407,908 lbs.; stock on hand, 1st January, 1848, 2,507,878 lbs.; being a decrease of 409,512 lbs. from the consumption of the previous year.

The number of vessels that sailed from the port of Montreal in 1847, were, for Great Britain, 154; Ireland, 13; the Colonies, 36; Oporto, 1; Quebec, 15.

Internal improvements in all the provinces will appear in a general table.

UPPER CANADA.—This province is separated from Lower Canada by the Ottawa river, which empties into the St. Lawrence near Montreal. Of Canada generally, it has been said, that the climate is subject to great extremes of heat and cold; the thermometer ranging between 102° above, and 36° below Fahrenheit; the ground being covered five months in the year with snow. The geographical limits are given from 57° to 90° west longitude, and 42° to 52° north latitude; forming an extent of 1,450 miles from Amherstburg, on Detroit river, south-west, to the Straits of Belleisle on the coast of Labrador. This line embraces the settled portions of the country from Lake Huron to Newfoundland; the whole territory is estimated at from 200 to 400 miles wide. Upper Canada is subdivided into

seventeen districts or counties, viz. :—Eastern, Ottawa, Johnston, Bathurst, Midland, Victoria, Newcastle, Simcoe, Home, Wellington, Gore, Niagara, Talbot, Brock, London, Western, and Huron. The population has increased tenfold in the last forty years, and is still increasing rapidly. From Lake Ontario to Montreal, the St. Lawrence is broken by a succession of rocks and rapids, which render navigation very dangerous. To overcome these obstructions, the Rideau Canal, 135 miles long, affords a passage to boats from the lake, near Kingston, to Bytown, on the Ottawa river, from whence the latter is navigable to Montreal. This canal cost about \$5,000,000, and has 47 locks, 142 feet long by 33 wide. Lakes Erie and Ontario are united by the Welland Canal, 42 miles, to avoid the Falls of Niagara. The descent of the canal, 330 feet, is accomplished by 37 locks, 100 feet in length. The whole work, with great natural difficulties to surmount, cost nearly \$5,000,000. The Lachine Canal, along the side of the St. Lawrence, to avoid a cascade, and the Grenville Canal, on the borders of the Ottawa, for avoiding its rapids, are minor works, though of great importance to navigation.

The growth of Toronto is evidence of prosperity in Upper Canada. In a statistical work of 1817, by Dr. Thomas Rolph, the writer, describing what was then Little York, (now the City of Toronto,) says :

“ Its population is 1200 souls; for five miles round the capital of Upper Canada, scarcely one improved farm can be seen in contact with another. The only connected settlement is about five miles to the north of Yonge street; in other directions, so far as the district goes, you might travel to its utmost limits, and not find more than one farm-house for every three miles.”

After quoting the above, in a recent address the mayor of Toronto proceeded :

“ Such was little York till about 1835. In 1817, it had no brick houses, no tinned roofs, no planked side-walks; the stumps remained in the streets, and nothing was more common than to see teams mired in them, requiring all the aid that could be obtained to liberate them. What is now the market was a bay, and the fish-market the resort of wild fowls—unhealthy, liable to fever and agues, and all the distressing catalogue of intermittents. No banks; no markets; a very mean building for a church; no common sewers; scarcely a schooner belonging to it, and few frequenting it; no wharfs; not a single importer of British goods; a few, and very few insignificant stores, and a few taverns, offering the worst accommodations. Such was Little York in 1817, now the celebrated city of Toronto. Behold now its 20,000 inhabitants; its rows of splendid brick-built, tin-covered houses; its magnificent churches, and number of places of worship; its banks; its floating palaces; its beautiful schooners; its magnificent stores, some of them rivalling those of the first city in the world, with their plate-glass windows, their spacious areas, and their splendid contents; its hundreds of thousands of annually imported goods; its merchants; its public reading rooms; its Mechanic's Institute; its Board of Trade; its public baths; its splendid avenue, leading to a noble University; its common sewers; its Macadamized streets; its planked side-walks above a mile, or nearer two, from its magnificent market and City Hall, in every street, and leading to almost every house. View its export trade, its wharfs loaded with produce, and crowded with steamboats

and schooners, the daily conveyance of the riches of the neighborhood. Behold its gas-lighted streets at night; and now that greatest of all luxuries—an abundant supply of pure and wholesome water conveyed to every house. Around it and about it, in all directions, fine houses, farms, orchards, villas and roads."

The population of Toronto in 1826 was 1,719, and in 1834, when the city was incorporated, it amounted to 9,654. By the census of 1846, the population is 20,565, of which 8,577 belong to the Church of England, and 4,307 to the Church of Rome. Some twenty other religious denominations divide the balance between them. An increase of ten to one, within twenty years, is almost unprecedented in the population of towns. The city of New-York, which has been regarded as foremost, has not kept equal pace since 1697, when its population was only 4,302. The fertility and healthiness of Upper Canada, and convenient transportation on the lakes and canals, are the chief causes of this prosperity. Much might be said in description of the soil and improvements, together with the general resources of Canada, showing it to be a country capable of sustaining a dense and happy population. Of the Western District, (the peninsula between Lakes Erie and Huron,) Dr. Rolph is enthusiastic in his praise:

"What shall I say?—that there is not in all America a soil so fertile, a climate so pure, scenery more beautiful, properties more reasonable; in fine, where every combination exists to render it the most attractive spot in her Majesty's possessions in America! All this do I say from personal knowledge, and it is a matter of the utmost astonishment that so large a district should remain so neglected and unsettled; for in no portion of Canada could horticulture, floriculture, and agriculture, be prosecuted with more certainty of success than in it. Peaches, plums, peas, apples, melons, grapes, Indian corn, tobacco, and vegetables of every description, grow in an abundance and with a luxuriance that is truly astonishing; and the day cannot be remote when such obvious advantages will attract attention. It is no longer inaccessible from bad roads, and I strongly recommend all who can afford it to pay a visit to it, before they determine where they shall settle when they have resolved on making Canada their home."

The value of imports paying duties in 1846, at Toronto, was \$842,385, exclusive of \$523,000 specie. Total revenue on importations collected during the year, \$162,645. Exports estimated in value, at \$1,505,000, of which the following are the principal:

Articles, &c.	Quantity.	Articles, &c.	Quantity.
Flour.....	194,856 bbls.	Butter.....	200 kegs
Pork.....	4,133 "	Lard.....	600 "
Beef.....	80 "	Starch.....	600 boxes
Timothy seed.....	176 "	White pine boards.....	1,680,000 feet
Wheat.....	108,116 bush.	Bricks.....	No. 1,030,000
Oats.....	3,000 "	Sheep pelts.....	10,750 "
Peas.....	1,000 "	Woollen cloths.....	40,000 yards
Beef.....	65 trcs.	Blankets.....	130 pairs
Hams.....	9 tons	Furs and peltries, value	
Horn-tips and scraps.....	11 "	about.....	£2,000
Asbes.....	283 casks	Fresh fish.....	£500

The quantity of flour and wheat exported from the Home District, in 1846, was—

	Flour—bbls.	Wheat—bush.
From Toronto.....	194,856.....	108,116
" Oshawa.....	34,630.....	16,560
" Windsor.....	55,460.....	24,300
" Credit.....	11,450.....	41,200
Total.....	296,396.....	190,176

The increase of exports over 1845 is estimated at \$364,840.

Shipping owned on Lake Ontario, and employed in the inland waters of Canada, viz : 57 steamers (two of iron) valued at \$1,750,000; 2 ships, 5 brigantines, and 95 schooners of 30 tons and upwards, \$750,000; 6 lake propellers, \$70,000; 300 barges, \$400,000; 7 river propellers, \$35,000,—small craft under 30 tons, \$85,000. Total, \$3,090,000.

Mills, factories, &c., in the Home District and city of Toronto, viz : 87 grist mills, valued at \$800,000; 196 saw mills, \$276,250; 12 oatmeal mills, \$16,500; 14 foundries, \$100,000; 18 woollen factories, \$125,000; 50 carding machines, \$15,000; 1 edgetool factory, \$10,000; 3 starch factories, \$12,500; 28 distilleries, \$54,125; 6 soap and candle factories, \$21,000; 1 cabinet and chair factory (steam) \$12,500; 3 cabinet and piano-forte factories, \$7,600; 2 paper mills, \$20,000; 36 tanneries, \$75,000; 1 snuff manufactory, \$2,500; 23 breweries, \$66,000;—total value, \$1,613,875.

In June, 1844, a steam schooner made the passage from Toronto to Montreal, 470 miles, laden with freight, in two and a quarter days, over the rapids of the St. Lawrence.

The Provincial Government has applied large sums for internal improvement, as the following grants in 1841, show :

St. Lawrence navigation....	\$3,458,410	Bridges, slides, &c., on the river Ottawa.....	140,000
Welland Canal.....	2,250,000	Desjardins Canal Company..	112,075
Light-houses, &c., on Lakes Erie and Ontario.....	370,000	Bay of Chaleur's road.....	75,000
Lake St. Peter.....	292,500	Cobourg Harbor Company	26,055
Newcastle District navigation	256,000	Oaksville Harbor Company	18,615
Burlington Bay Canal.....	225,000	Port Harbor Company.....	15,375
Bridges between Quebec and Montreal.....	170,000	Tay Navigation Company...	7,805
Road from Burlington Bay to Port Dover.....	150,000	Road from Ottawa to St. Lawrence.....	7,500
Road from Lake Ontario to Lake Huron.....	150,000		
			\$7,718,335

Prior to the Union of Upper and Lower Canada, in 1841, the Legislature had expended on the improvement of navigable water courses, and in the construction of canals, the following sums :

Welland Canal.....	\$2,314,280	St. Ann's Rapids.....	21,540
St. Lawrence Canal.....	2,200,485	Paris Bridge.....	10,000
Montreal Harbor.....	435,000	Brentford Bridge.....	10,000
Chambly Canal.....	185,000	Dunville Bridge.....	10,000
Troat navigation.....	116,170	Chatham Bridge.....	10,000
Newcastle District.....	108,300	Steam Bridge, Montreal....	7,500
Kettle Creek Harbor.....	37,500	West Gwilliambury Bridge..	4,775
Toronto Harbor.....	26,000		
Trent Bridge.....	24,000	(Total, \$13,238,885)....	\$5,520,530

In 1842, the first year after the union, the gross amount of customs collected in Canada was \$1,394,650, viz : at Montreal, \$

255; Quebec, \$340,000; St. John's, \$84,320; Toronto, \$40,265; Burlington Bay, \$36,315; Kingston, \$32,550;—other ports, smaller sums. The increase of revenue from customs over 1841, was \$304,453. At Quebec and Montreal alone the increase was \$276,630. The tolls on the Lachine Canal produced during the year, \$81,610.

The public debt of Canada amounts to \$12,000,000; the revenue to about \$2,600,000, and expenditures to \$3,000,000 annually. Some retrenchment is necessary to equalize the financial system, otherwise it will create an irredeemable liability, draining the people by taxation, as in the mother-country, to pay interest. The government of Canada devotes from \$300,000 to \$500,000 annually to the support of schools.

NEW-BRUNSWICK.—The north-east boundary question, which so long agitated the counsels of Great Britain and the United States, concerned the province of New-Brunswick on the one part and the state of Maine on the other. In 1842, it was amicably settled by the Ashburton treaty. The line established does not materially differ from that awarded by the King of the Netherlands. We have seen a calculation of the disputed territory, allowing it to contain 12,027 square miles, of which, by the treaty of 1842, the United States obtained 7,015, and England 5,012. By the line of the King of the Netherlands, the United States would have had 7,908, and England 4,119 square miles. Whatever the claims of either power, they have been adjusted in a satisfactory and honorable manner, so as to admit no future contention.

The province is laid off into twelve counties, of which we subjoin a table, showing the quantity of granted and vacant land in each, and also the number of persons who have squatted on crown lands, to 1842, without authority, the acres occupied by them, and estimated value,—

Counties.	Granted and located acres.	Vacant acres.	Squatters. No.	Occupied acres.	Value. dollars.
Nothumberland.....	984,000	2,216,000	174	17,400	13,050
York.....	921,000	1,280,000	142	14,200	10,650
Westmoreland.....	780,000	532,000	166	16,600	12,450
Kings.....	605,920	244,000	145	14,500	16,875
Carleton.....	504,000	2,038,000	122	12,200	9,150
Queens.....	491,280	470,000	139	13,900	10,425
Sunbury.....	369,080	413,000	95	9,500	7,125
Kent.....	354,000	552,400	132	13,200	9,900
Gloucester.....	324,000	713,440	199	19,900	14,925
Charlotte.....	303,360	480,000	142	14,200	10,650
St. John.....	288,720	126,000	62	6,200	4,650
Restigouche.....	152,000	1,114,560	82	8,200	6,150
	6,077,960	10,129,400	1,600	160,000	120,000

The New-Brunswick and Nova Scotia Land Company have taken 500,000 acres between Nashwach and Miramichi rivers, which they offer in 100 tracts to settlers, at \$1.50 per acre, payable in eleven annual instalments, without interest. The lands in general are good, and roads have been opened in different directions across them. It

is recommended that emigrants unite, forty or fifty together, and send an agent in advance to select their lands, and make temporary provision for their arrival. Young men usually hire on a farm, or to a lumbering party during the summer when wages are high, and work on their own land in winter, supposing they have saved money enough in the first two or three years to purchase a tract. Then they marry, and push their fortunes as best they can. Young women find employment both in the town and in the country at two and three dollars per month.

Referring to the necessity and benefits of emigration to New-Brunswick, Dr. Gesner says :

"In the old country, early marriages are discouraged, because they contribute to an increase of numbers, and, consequently, of misery. In the North American Colonies they are viewed as being advantageous, from the accession they make to the population; and the birth of a child in the backwoods is hailed with more than ordinary natural joy, because, by the labor of his offspring, the capital of the colonial settler is increased."

Farther, he remarks :

"A due regard should always be had to the habits and kind of industry the emigrants have been trained to. Serious blunders have been committed, by locating people who had been brought up to fishing, in the forests remote from the sea,—and also by establishing families who had been bred to husbandry, upon a coast or river, where a part of their subsistence must necessarily be drawn from the water. The adopted home of every family brought across the Atlantic should correspond as nearly as possible with their former residence, and their pursuits should deviate as little as possible from those to which they are accustomed."

A number of instances are stated, where individuals, poor and friendless, but with manly resolution, have gone into the forest, and by patient industry have accumulated snug fortunes. Dr. Gesner relates a very interesting case, on a small scale :

"J. G., in the county of Gloucester, took possession of a lot of land on the 16th May, 1832; in the same season he cleared ground from which he raised eighty bushels of potatoes, ten bushels of turnips, and ten of buck-wheat. With these, and the fish he took upon the shore, and five bushels of wheat paid for in labor, he maintained his family, (a wife and two children,) until the second, and a much larger crop was obtained. In the first year he built a log-house and a hovel for a cow, and chopped eight acres; in 1843 he raised eighty bushels of wheat, one hundred of oats, five hundred of potatoes, ten of barley, twenty-five tons of hay, kept ten head of horned cattle and two horses, and was in independent and most comfortable circumstances."

The forests of New-Brunswick constitute much of its trade and wealth. Its position, between 45° and 48° north latitude, is peculiarly suited to the growth of valuable timber trees. Mr. Perley, the government emigrating agent, has described and classified them in a report of much length. We barely have space to enumerate them by their common names, viz: the Oak, two species, gray and red; Maple, white, red-flowering, sugar, moose, mountain; Birch, canoe, white, yellow, black; Cherry, wild, northern; Poplar,

balsam, American-aspen; Beech, white, red; Hornbeam, American, ironwood; Ash, white, black; Willow, black, champlain, shining; Elm, white, red; Pine, red, gray, white; Spruce, black, white, hemlock, American silver fir; Alder, common, black; Walnut; Dog Wood; Cypress or White Cedar.

This variety, found in almost inexhaustible profusion, affords the labor of man a wide field and sure reward. Bonnycastle, speaking of the forests of Canada and New-Brunswick, indulges in some beautiful reflections, which we copy:

"I know of nothing in this world capable of exciting emotions of wonder and adoration more directly, than to travel along through its forests. Pines, lifting their hoary tops beyond man's vision, unless he incline his head so far backwards as to be painful to his organization, with trunks which require fathoms of line to span them; oaks, of the most gigantic form; the immense and graceful weeping elm; enormous poplars, whose magnitude must be seen to be conceived; lindens, equally vast; walnut trees of immense size; the beautiful birch and the wild cherry, large enough to make tables and furniture of. Oh! the gloom and the glory of these forests, and the deep reflection that, since they were created by the divine fiat, civilized man has never desecrated them with his unsparing devastations; that a peculiar race, born for these solitudes, once dwelt amid their shades, living as Nature's woodland children, until a more subtle being than the serpent of Eden crept amongst them, and, with his glittering novelties and dangerous beauty, caused their total annihilation! I see, in spirit, the red-hunter, lofty, fearless and stern, stalking in his painted nudity, and displaying a form which Apollo might have envied, amidst the everlasting and silent woods. I see, in spirit, the bearded stranger from the rising sun, with his deadly arms and his more deadly fire-water, conversing with his savage fellow, and displaying the envied wealth of gorgeous beads and of gaudy clothing."

The fancy sketch, so far as applicable to the Indians of New-Brunswick, will justify a brief allusion to them. They are now reduced to two tribes, numbering 1,377,—the Micmacs, 935, and Miclates, 447. Both inhabit the same district, yet cannot understand each other's language. Fourteen tracts of land, containing 61,273 acres, have been reserved in different parts of the province for their use, and which they are permitted to occupy during pleasure. Like most other red men, they resist all progress. Dr. Gesner says:

"The Indian naturally despises the refinements of civilization; he looks upon the forest as his home, and ever longs for wild adventure. Much pains have been taken to improve the condition of these people. Young children have been taken, with their parents, and educated with much care. They have been instructed in the arts and agriculture; but no sooner were they liberated from their masters, than they returned to all their haunts and habits of their forefathers, and became the most depraved of all their race. By associating and laboring with the inhabitants of the Province, they have advanced slowly in agriculture, and a few families may be found who support themselves comfortably by their own exertions. But their intercourse with the whites has always been the introduction to intemperance, disease, and idleness; and if we judge by the rapid decline in their numbers since the country was colonized, there is reason to fear that the day of their arrival at an ordinary degree of civilization will not long pre-

cede the day when the names of their races will be blotted from the pages of American history."

In the seven ports of entry,—St. Johns, Miramichi, Dalhousie, Bathurst, Caraquet, Richibucto and Dorchester, the imports in 1844 amounted to \$4,083,710, being an increase of \$1,058,135 over the previous year. The exports for 1844 were, in quantity, as follows: Timber, 190,320 tons; deals, M. feet, 108,424; boards, M. feet, 844; shingles, Mds., 7,042; staves, 48,612; masts and spars, 5,538; small poles, 8,455; hand-spikes, 273; oars, 3,053; tree-nails, 58,420; lathwood, 3,424 cords; laths, 1,774 Mds.; pickled salmon, 2,479 bbls.,—6,419 kits; smoked salmon, 406 boxes; mackerel, 24 bbls.; dried fish, 12,405 quintals; alewives, salted, 16,229 bbls.; shad, salted, 117 bbls.; codfish, pickled, 214 bbls.; herring, salted, 1,754 bbls.; herring, smoked, 7,308 boxes; potatoes, 12,782 bushels; lime, 1,470 hhds.; furs, 14 packages; oil, seal, 240 galls.,—cod, 5,744 galls; grindstones, 3,870,—gypsum, 358 tons.

Some estimate may be formed of the product of the fisheries, by the exports of fish and oil from the port of St. Johns in 1839, which amounted to \$281,545. The yield, however, is fluctuating, as in 1845 it was only \$108,485 for the whole province. Many disputes have arisen, as to the right of citizens of the United States to fish within three miles of the coast, under the treaty of 1783 and convention of 1818. The British allege that all fishing by foreigners, within that line, is a trespass; and notes have passed on the subject between the cabinets at London and Washington. In 1841, Mr. Stevenson complained of certain seizures of American fishing vessels by provincial authority. The British Colonial Secretary insisted upon the exclusion, not only from three miles, following the indentations of the shore, but by a line drawn from the headlands, or extreme points of land next the sea. Nothing farther was done, and we presume this construction has been acquiesced in by our government.

The shipping of New-Brunswick in 1844 consisted of 672 vessels, with a tonnage of 92,210, manned by 3,917 men.

Turning from dry details, we beg to amuse our readers with an extract from the book of Dr. Gesner, which shows that even the people of New-Orleans, in mosquito time, are highly blessed in comparison with the citizens of New-Brunswick. Dr. G. says,—

"A long chapter might be written on the biting and stinging insects that infest the woods during the summer months. In the heat of the day black flies bid defiance to mosquito nets, ointments, and every kind of cosmetic. No sooner had we landed than the blood began to flow down our faces from the bites of these merciless tormentors. At sunset the unseen midge commences operations, and the more musical mosquito begins to sing and perforate the skin with his blood-pump. A Yankee backwoodsman told us that he could 'stand' the mosquitoes and black flies, but as to the midges, he despised them.' We, however, found that our estimation of these sweet creatures had little influence on their biting propensities; the only remedy for them is to stand in a thick smoke of cedar bark. This, it is true, is somewhat inconvenient for those who put a high value upon a fine complexion, as the skin thus smoked soon resembles a

piece of Irish bacon. In some of the low, swampy grounds, the mosquitoes are so numerous, that they are inhaled by every breath drawn by the traveller. Each of our party were compelled to carry a large torch of cedar bark, and the constant flourishing of these smoking fire-brands around our heads reminded me of the menaces made by an Irish mob with their shillelahs."

With regard to the geology of New-Brunswick, very little is known for want of adequate explorations. Limestone appears to be the prevailing feature. Coal is abundant, and is wrought, near the Grand Lake, by a joint-stock company. Iron and gypsum are also found in large quantities. The climate is similar to that of Canada,—winter lasting from November to April. Agriculture is depressed by the fisheries and timber trade—the latter producing habits of a deplorable kind. The lumberers have been described as the pests of a colony, "made and kept vicious by the very trade by which they live." The population consists mainly of English, Irish, Welsh and Scotch, with three small settlements of French on the east side of the colony. Besides a regular army paid by England, the native militia is about 25,000 strong.

Education is liberally provided for at the public expense,—there being about 500 schools for elementary instruction, attended by 8,000 boys and 6,000 girls. King's College, at Fredericton, was established by the exertions of Sir Howard Douglas, governor from 1824 to 1831, and is chiefly maintained by an annual grant of \$10,000 from the local government.

NOVA SCOTIA.—Of all the British colonies north of the United States, Nova Scotia is the most densely populated. By a low, sandy isthmus, only fourteen miles across, it is connected with New-Brunswick on the west, and separated from Cape Breton on the north by the narrow strait called the Gut of Canscau. The climate is much like that of Lower Canada, varying from 95°, extreme heat, to 10° below zero, and at times as much as 50° and 60° in twenty-four hours. The warmth of summer occupies about three months, beginning with June. The fair and wet days are in the proportion of eight to five. In most other countries, sudden changes of temperature affect the general health. Not so in Nova Scotia. The complaints most prevalent are rheumatic and inflammatory. Intermittent fevers are wholly unknown; typhus occurs only in a mitigated form, and the ravages of the yellow fever have never been felt.

There is a degree of romance connected with Nova Scotia, which tempts us to give a few particulars. To promote colonization in America, Charles I, in 1625, granted several of his barons large districts of land in Nova Scotia, which should enure to them in fee, on settling a certain number of persons in the colony. These grants subsequently amounted to one hundred and eleven, of 16,000 acres each. The terms were modified by sundry royal acts, and the whole affair seems to have slept for more than two centuries, without any positive fulfilment. At length old dusty parchments were evoked, and in November, 1844, a meeting of the Hereditary Order of New-

Scotland took place in Edinburgh. A report was submitted, sustaining the claims of the nobility to the possessions conceded by the crown, and denying all fraud and forfeiture. The speech of Sir Richard Brown on the occasion, is a compact and ingenious defence of the barons. After dealing freely with the industrial and pauper statistics of Great Britain, so far as his object made it necessary, he aims a blow at the United States, accompanied with information entirely new to our people, and we venture to say, unsupported by facts.

Sir Richard is striving to arouse emigration to Nova Scotia, so that the wilderness acres of the nobility may be turned into fruitful fields, with rents fit for the Order! He has quarrelled with the British system of labor and compensation, and, as a remedy, points to the new world. There, under the rule of titled proprietors, the working classes are to find plenty, and all the blessings of life, in return for moderate toil. In the effort of Sir Richard, there is such a thorough, bold and vigorous assault upon the social platform of his own country, that we almost pardon his misguided zeal when directed against our republican form of government. To the charge of combination, which he prefers with pompous particularity, and the secret oath having the overthrow of British dominion in America firmly at bottom, we record as complete a negative as the greatest stickler for certainty could desire. Some experiment must have been made in his imagination. Louisiana is in the catalogue as having eleven lodges at work to accomplish the plot! In the border states—Maine, Vermont and New-York, it is possible a few sympathizers with McKenzic may have instituted a league, under obligations, to revolutionize Canada; but the idea that eighteen other states, some of them two thousand miles from the scene of action, engaged in it with solemnity, is too ridiculous to deceive any mind.

We quote from the speech of Sir Richard :

"In the United Kingdom, exclusive of 1,300,000 English paupers who receive legal relief, we have an average of more than one-fifth of the population unable to live by lawful industry—that is to say, 5,400,000 souls. But these figures added together, namely, 6,700,000, exhibit by no means the most revolting features in the social aspect of the present age. Out of a population living by wages—upon the fruit of their daily, aye, and often nightly toil—a large number may be considered paupers in every sense of that term,—their average earnings per head not exceeding 8 shillings a week. Are microscopes needed to perceive the filth, the privation, the cold, the hunger, the thirst, the nakedness, the crime, the sickness, the mortality of such a condition as this? It has created in the British Islands," says an intelligent foreign writer who has recently gone through the length and breadth of the land, "a reality of misery, depravity, and every hideous form of human suffering, which surpasses anything that the imagination of a Dante ever conceived in describing the abode of devils and the torments of the damned!" Turn we then from this great intestinal worm—this *anguis pectoris*—which is living and feeding, and growing daily upon the vitals of the British nation, to consider for an instant that other and scarcely less fearful sources of hostility centered in our own loins, and ever active in these crowned isles, though chiefly domiciled in what was England's other self, her name-daughter and her glory in the western

world—I mean Republicanism. This is the generic title of an aggregate of feelings, each pre-eminently militant to our national security, to our commercial prosperity, to our strength as a maritime and colonial power, and to our very existence as a monarchical state. It has already indicated itself, and it does now indicate itself, by a variety of acts, all aiming at one grand consummation—the breaking up of our territorial supremacy and institutional power. We scarcely sheathed the sword which its development in the Canadas caused us to wield in 1837 and 1838, when it glutted itself with some million acres of our land in the province of New Brunswick, being one of nine unprincipled concessions of a similar kind which we have progressively yielded since the year 1798. Since then the United States have either founded or multiplied Hunter Lodges as follows: In Massachusetts, 89; in Rhode-Island, 15; in Connecticut, 68; in Maine, 99; in Vermont, 107; in New-York, 283; in Michigan, 54; in Wisconsin, 7; in Illinois, 21; in Indiana, 14; in Ohio, 86; in Pennsylvania, 49; in Kentucky, 11; in Virginia, 21; in Maryland, 16; in Delaware, 2; in New-Jersey, 17; in Missouri, 39; in Iowa, 3; in Louisiana, 11; in New-Hampshire, 78; in Lower Canada, nearly the whole of the French population; in Upper Canada, 84; in New-Brunswick, a few, and in the other parts of the United States not mentioned nearly 100. The number of members taken at a minimum, may be fairly calculated to be not less than 80,000 able bodied men; and their objects are exposed in the oath which is administered on their admission. ‘I swear to do my utmost to promote republican institutions and ideas throughout the world—to cherish them, to defend them, and especially to devote myself to the propagation, protection and defence of these institutions in North America. I pledge my life, my property, and my honor to the Association. I bind myself to its interests. And I promise until death that I will attack, combat, and help to destroy, by all means that my superior may think proper, and especially never to rest till the British tyrants cease to have any possession or footing whatsoever in North America. So help me God.’”

More than a dozen resolutions were adopted at the Edinburgh meeting, one of which we copy, as indicating the objects to be attained by the whole:

“10. *Resolved*, That with the farther view of combining the influence and exertions of all parties, on either side of the Atlantic, having an interest in, or favorable to, the revival of the rights and objects of the Baronetage of Scotland and Nova Scotia—promoting the systematic colonization of British North America—raising the capital for these national ends—and otherwise superintending and managing the common properties and estates of such Baronets, and other landed proprietors in the Colonies, as shall join it, this meeting sanctions the formation, and approves the principles of ‘The Scottish Company for advancing the Plantation of Nova Scotia and Canada;’ the Baronets present, and those concurring by letter, agreeing, as soon as 10,000 shares are subscribed for by responsible parties, and the first instalments paid, to vest their lands in it, either in whole or in part, taking shares for the same,—further pledging themselves, on the Company’s coming into practical operation, to use every possible means in their power to settle the estates, baronies and regalities forming its territory, with such of their friends, clansmen, tenantry, retainers, and others, as may be disposed to rent farms of the company under improving leases.”

What active measures have been taken to carry this scheme into

effect, we are not advised. In a government of classes like that of Great Britain, the system proposed would ameliorate the condition of the laboring poor, by reducing their numbers in the old country, and opening new avenues to emigrants. There is a boundless, teeming field for husbandry in the land to which colonization is invited. Support is easily obtained from forest and sea.

Halifax is the capital of Nova Scotia, and affords the best harbor in British America—a sheet of water equal to ten square miles, completely land-blocked, and capable of containing the whole British navy. The harbor is accessible at all seasons, and its navigation is scarcely ever interrupted by ice. A canal, to which the legislature contributed \$75,000, has been finished by a joint-stock company, connecting the harbor of Halifax with Cobequid bay and the bay of Fundy. The exports of mackerel in 1844, amounted to 71,854 bbls., showing a progressive increase over the five years preceding—from 19,127 barrels in 1839; 25,010 in 1840; 25,031 in 1841; 54,158 in 1842, and 64,376 in 1843.

In 1836, the ships entering the ports of Nova Scotia, were 3,404—tonnage 381,133; and those clearing were 4,574, with a tonnage of 294,520.

The principal articles exported from Nova Scotia in 1836 were, in quantity and value, the following :

Beef and Pork.....	lbs	6,880.....	\$86 035
Coals.....	tons	42,587.....	191 640
Corn and Meal.....			94 000
Fish—Cod, dry.....	quintals	221 503.....	595 270
do wet.....	"	37,133.....	150 455
Other sorts of Fish.....			40 265
Gypsum.....	tons	31 489.....	70 825
Oil, train and sperm.....	galls.	221 967.....	115 025
Whalebone.....	lbs.	21 000.....	3 530
Pine Timber.....	tons	15,523.....	73 735
Deals and Planks.....			266 7-0
Other sorts of wood.....			237 8 15
Miscellaneous.....			274 445
			\$2,230,485

Halifax has a few manufactures, mostly for immediate consumption, such as soap, candles, leather, paper, snuff, rum, gin, whiskey, porter, ale and refined sugar. There are two private banking companies in the town, and a chamber of commerce of fifteen members. The New-York, Boston, Liverpool and West India steam-packets touch regularly at Halifax.

Nova Scotia has the elements of much wealth,—possessing coal and plaster of paris abundantly, and a fertile soil. The bay of Fundy is noted for its tides, which rise 50, 60 and even 70 feet, and so rapidly, that cattle feeding on the shore are often overtaken and drowned. About one-fourth of the population is of Scottish origin, and the rest chiefly from England and Ireland, some from New-England.

NEWFOUNDLAND, the great fishing island of North America, is about 350 miles long, and 150 average width, lying between parallels 46° and 51° north latitude. The surface is broken, wild and

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very gaudy colors, and are covered with furs of various descriptions; the horses are dressed in like manner. You will see vast numbers of these vehicles running in procession, each one armed with an immense ring of bells."

It has been supposed that the Norwegians discovered Newfoundland, in the eleventh century; but, if so, it was subsequently forgotten, till John Cabot visited it in 1497, and gave it its present name. In 1500, the Portuguese and French carried on an extensive fishery on the neighboring banks. No permanent colony was established until 1623, when Lord Baltimore took possession of the south-east part of the island, and appointed his son governor. The subject of fishery rights has been a vexed question between the British, French, and United States governments; the people of each occupying at pleasure, especially along the Grand Bank, which affords room enough for millions of laborers, and is not included in any treaty stipulations.

The greatest production of the fisheries in any one year, was in 1814, when the exports amounted to \$13,000,000; but the English part of the business has since declined, so that for the years 1837-38-39 it averaged only \$2,500,000. Number of boats employed, 6,159.

From 1830 to 1843, inclusive, the seal fishery employed the following annual outfit from the port of St. John's:—

Year.	Vessels.	Tons.	Men.	Year.	Vessels.	Tons.	Men.
1830.....	92.....	6,198.....	1,935	1837.....	121.....	10,648.....	29,40
1831.....	118.....	8,046.....	2,578	1838.....	110.....	9,300.....	2,826
1832.....	153.....	11,462.....	3,294	1839.....	76.....	6,417.....	2,029
1833.....	106.....	8,665.....	2,964	1840.....	75.....	6,100.....	2,058
1834.....	125.....	11,020.....	2,910	1841.....	73.....	5,695.....	2,078
1835.....	120.....	11,167.....	2,912	1842.....	74.....	6,035.....	2,054
1836.....	126.....	11,425.....	2,855	1843.....	106.....	9,625.....	3,175

The value of exports from St. John's, for five years, is given as follows:

Year.	Dried Fish.	Oils.	Seal Skins, Salmon.	Herrings.	Total.	
1839.....	\$2,423,245	1,247,140	152,370	66,550	53,615	\$3,889,305
1839.....	2,540,785	1,226,345	231,680	59,810	69,200	4,058,620
1840.....	2,881,225	1,525,985	197,040	64,695	45,180	4,714,125
1841.....	3,025,020	1,334,160	149,805	61,510	31,805	5,602,300
1842.....	2,809,750	1,606,565	116,000	68,390	35,595	4,196,300

The imports at St. John's, for 1842, amounted to \$3,471,675.

NEW-BRITAIN, stretching from Labrador on the Atlantic, to New-Archangel on the Pacific Ocean, a distance greater than from New-York to Astoria, is the vast possession of Great Britain, north of the Canadas. It extends from 50° to 70° north latitude. The soil is so rocky and thin, that only moss, shrubs, and a few stunted trees can grow upon it. Numerous lakes and ponds of fresh water are almost everywhere scattered over the surface. Bears, beaver, deer, raccoons, and other animals, valuable for their skins and fur, abound, and hunting them is the chief employment of the inhabitants. The Hudson's Bay Company have established the only civilized settlements: Forts Albany, Churchill, Reliance, York, and a few others. This company was incorporated by a charter from Charles II., in 1669. In 1837, the principal furs offered for sale were beaver skins,

82,327; marten, 156,163; fox, 25,000; musquash, 838,550; lynx, 31,887; mink, 27,570; an amount larger than that of several years immediately preceding. The company in the same year exported 1,259,000 goose and swan quills, 461 lbs. sea-horse teeth, besides castor, isinglass, and other articles. The trade at the forts consists in the exchange of blankets, powder, beads and trinkets, with the savages for furs, in search of which agents are sent in every direction.

A country so cold and barren has no improvements worthy of note. The Indian tribes and the fur traders doze away life in camp, animated occasionally by a little traffic with each other. A description of the bays and straits from Belleisle to the mouth of Mackenzie's river, in the Arctic Ocean, would be the most we could furnish our readers relative to this wild desert, a task already better performed by Morse and other geographers.

In the exhibition of facts touching British America, we have endeavored to compress, without groping in the fog of regulations from the mother country, which are about as dense and impenetrable as the atmosphere of the Newfoundland coast, on a calm morning in autumn. While something has been done to improve the condition of her laboring poor, by colonizing, Great Britain has the scope, in her North American provinces, to achieve a hundred-fold more than she has attempted.

Art. III.—THE VINE CULTURE AT THE SOUTH.

[We have on frequent occasions, in the 2d, 3d, 4th, and 5th volumes of the Commercial Review, referred elaborately to the product and manufacture of wines in our own country, and furnished full and elaborate papers from various sources upon the subject. Our desire has ever been to present the matter with the utmost fullness and fairness. In this view we publish the following letter.

In regard to the specimen bottles of wine referred to by our friend, which he kindly forwarded to our address, we received and discussed them. Nothing could be conceived more exquisite than the flavor it possesses; and a gentleman who has travelled extensively in Europe, to whom we generously accorded a few sips of the nectar, conceived that nothing he has met with upon the Rhine could compare with it! He was in extacies. *So were we.*

Our friend, Mr. Weller, of North Carolina, sent us some time ago, several delightful specimens from his vine-yard, and we well remember the pleasure with which a party of our friends, on the Fourth of July, decanted glass after glass, to the health of the "old North State," and her neighbor to the southward.]

J. D. B. De Bow, Esq. :

As I am deeply interested in the prosperity of the vine culture of the South, and seeing an article in your number for January last that tends to create a strong dislike to the use of wine, I have at length thought proper to correct it, and in doing so, I wish you to understand that I do not attach the slightest blame to yourself. The article in question I wish to refer you to, is on the 25th page of your January number, 1848, headed "American wines and vices." Mr. S. Weller, of Carolina, states that a good wine cannot be made without the aid of three pounds of sugar per gallon, or one-third part of spirits. Now I have no doubt as to Mr. Weller's statements

being strictly correct, as far as his experience in that climate and in the section of country in which he resides goes. As I have had the advantage of some years' correspondence with Mr. Weller, I have formed a very high opinion of him as a vintner; but his statistics for the Carolinas, when applied to our warmer states, will have no application. When he sees from the following the superior quality of fruit produced here from the same grape he cultivates in Carolina, he must readily account for the different results I am about to show in the manufacturing of wine in Mississippi. I have sent you two small bottles of this wine that you may examine it, in company with two or three of the best judges of your acquaintance, and make what remarks you think best upon it. The opinion entertained by myself and friends here of this wine, is exceedingly flattering. We believe it possesses the qualities of three of the finest wines in the world, namely, Champagne, Muscat and Hock, (3 parts of the first named, 2 parts of the second, and 1 of the last named wines.) A very small quantity of sugar was put into this, and I think it would have been much better without. Not one particle of spirits of any kind whatever has been mixed with it, and I think the smallest portion would have destroyed its delicacy and piquant force so desirable to connoisseurs. By the bye, I am saying too much myself about this wine when seeking the opinion of others; but I hope to have the opinion of yourself and friends entirely apart from all that I have said. One thing more I must say with regard to its condition; it was made last September—was only six months in cask, (instead of two years,) and has been but four months in bottle, when it ought to have been a year before it was examined; you will make every allowance for such disadvantages, of course. While my object in writing you this letter is to remove the unfavorable impression Mr. Weller's letter must have made on the public, I wish also to say a few words upon the culture and the extension of the wine cause. We shall soon find in this country, as they have so long found it in Europe, that some neighborhoods are famous for wines, for richness and delicacy of flavor, that no other wines can equal. As they cannot be transported to any great distance without the aid of spirits, we must be deprived of their use. This wine, though so lusciously delicate, possesses a body of the stronger conserve, and will allow of being transported to any inland distance when properly packed; but to enjoy all its qualities, the growth will have to be confined to a few of our Southern states, such as this state, Louisiana, Alabama and the Floridas.

GRAPE CULTURE.—As it would be vain in me to mark out a course of habits and a form of diet followed by any one nation, and rigidly enforce it to the use of all, so it would be equally vain to recommend the plan of culture of one kind of grape to be adopted for all, or that of one climate in the states to be followed in all the Union. I shall therefore confine myself to a course of culture necessary to be applied to the grape I have adopted in my vineyards, and the treatment I conceive to be best in the states above named. After failing in

upwards of fifty varieties, and abandoning them as useless, I have selected one called the Roanoke, and known by that name from the time it was discovered on the island of Roanoke down to a recent period, when it took the foolish name of Scuppernong, which it now holds in the Carolinas. I have made three different kinds of wine from this grape last year, and all equally good, although differing in flavor and color so much, that no one could judge they were made from the same fruit. The Greeks call this grape the Flearic, and insist upon it as the one from which they make the choicest wines of that country. A Greek gentleman of my acquaintance in Natchez, last summer, in company with a countryman of his, paid me a visit for the first time, to see my vineyard. The fruit was not then ripe; but the moment he fixed his eyes on the grape, he recognised it as an old friend. He told me more of its properties as a wine grape than I have been able to learn from any other source; and the information I derived from him was of much use to me during my last vintage, and also at the bottling of the wine last spring. I think it pretty certain that this grape is a native of a very different climate than Carolina, as it does so much better in this climate. The following facts go much to show this, as I cannot claim, as the result of management, all the difference produced here. Climate must be important. A writer on this grape in that country about 25 years since, gave a very excellent description of it. He stated that the size of the berries did not exceed more than $2\frac{1}{2}$ inches round, and in weight not exceeding 82 grains. Now it is common for me to have fruit to measure $3\frac{1}{2}$ inches round, and at times more, and weigh 150 grains to the single berry. The fruit has always been ripe here the last of August, long before the hot weather has subsided, giving every chance to the grape to acquire all the saccharine so essential to strength and body. Thus the wine does not require the aid of sugar or the smallest particle of spirits to give it conserve. It is not so in Carolina. There it does not mature its fruit until October, and by that time its maturity is checked by more or less cold weather, and, as Mr. Weller says, about a fourth, or if a strong wine be wanted, a third of good spirits must be mixed with the juice. Now the admixture of spirits destroys the delightful bouquet and picquant force that characterizes the wine I have sent you, and, in fact, all the wines I have ever made here.

The treatment I pursue in the culture of this grape is different from that used in all other kinds. I apply no summer pruning whatever, other than to tie up all the branches of a growth in order to prevent the ill effects of wind. At the first planting I set out well-rooted plants of one season's growth from layers, as this grape will not grow from cuttings. These are planted twenty feet apart, in straight lines, attached to a stake five feet high. As soon as they shed their leaves in the fall, all the tendrils or claspers they have made must be removed, except those that take hold of the stake; for if any are allowed to remain clasping their own branches a second year, the branch will die above the grasp, as the claspers will have ceased to grow and become as hard as wire.

On the first dry weather, late in December or early in January, I cut off all branches that may be in the way the next season, and all dead wood, if any, and any tendrils found clasping a branch that may have escaped notice before. In removing the branches, I take care to cut close to the stem from which they are taken, as the bark will then slip over more readily when it begins to grow. These operations close the first season. I commence the second by driving down additional stakes on each side, in a straight line with the first, at proper distances to receive the lateral or side branches that have been formed. I then nail across, in a horizontal line, and about nine inches apart, cane poles to receive the small upright branches of the next season's growth—at all times taking care to keep the mother or main stem upright at the centre stake, and adding to the height of that stake as often as it requires. After this work is performed—which we call dressing—I proceed to hoe and rake the ground about the vines, regarding it unnecessary to clean or plough the whole of the vineyard until the third or fourth year, since the roots will not extend from plant to plant until after that time. I proceed the third season in the same manner as the second, adding stake behind stake, in a straight line, and poles, until the vines, planted twenty feet apart, touch each other. This kind of trellis training is cheapest and much the best until the vineyard has established a good growth. A cheap arbor can then be erected by setting up strong rough posts eight or ten feet high, and throwing rough rails from post to post. Cane poles may then be placed across for the vines to run on. From year to year extend the growth at the top, and diminish that below, by cutting out the lower branches. This plan will tend to give a moderate excitement in the circulation of the sap, as well as to improve the fructifying powers of the plant.

I am not sufficiently acquainted with chemistry to be able to give a proper description of the soil of my vineyard, but, as far as I can judge, it is principally composed of a light yellow loam with a small quantity of sand, and a still smaller portion of lime. But whatever may be its quality, thousands of acres lie almost abandoned as useless, having been exhausted by the constant succession of crops of corn and cotton. I do not pretend that this worn-out land is exactly fitted for the reception of the grape in its present condition, but all it requires is a small portion of sand and rotten log, or black soil, or stable manure, mixed up and spaded in well with the natural soil, in the places where each vine is planted. This gives it a start, and it will soon find the way into the natural soil and thrive in it, by the aid of the smallest portion of compost raked into the surface every fall.

Inquiries are often made in regard to the probable profits of a vineyard; and as mine are too young to estimate by as yet, I would prefer not to give an opinion, but refer all inquirers to Mr. Weller's letter to which I have alluded.* No one can be better qualified than that gentleman to give an opinion.

I promised to say something on the extension of the wine cause in this neighborhood. My success has already given such a different

* See Commercial Review, vol. V, pp. 28-9.

coloring to the wine business here, that three new vineyards are to be planted out next fall within three miles of my place; and I am willing to wager that there will be twenty planted in this county within the next five years, though there are now only two in existence, and these owned by myself. As soon as it is believed that a grape has been found that will produce a crop every year, the business will make most rapid strides. I have several orders on my books already for wines next fall, and I shall only be able to supply from three to four hundred flasks after supplying my own wants. As many persons inquiring about the profits of the wine business will not be able to see Mr. Weller's letter, it may be well, perhaps, to notice part of it here. He states various results from his own experience as well as from that of others, and a profit of \$2,000 per acre is among the lowest. These estimates may appear high to some persons, but I think \$2,000 profit per acre from a vineyard in the south at 12 years old, a very fair estimate from the grape mine is planted with.*

Yours respectfully,

J. NOYES.

Holly Wood, Natchez, Miss., July 25, 1848.

ART. IV.—CALIFORNIA, NEW-MEXICO AND THE PASSAGE BETWEEN THE ATLANTIC AND PACIFIC OCEANS.

HAVING adjusted the great questions of Oregon and California, so long distracting the popular mind, the American people are now settling themselves down, after the usual fashion, to count up their gains and their losses, and strike the balance sheet. The "pen" with them is "as powerful as the sword," and that is *irresistible*.

Having a thousand miles of coast upon the Pacific, and three times as much upon the Atlantic, subject to our sway, we are naturally solicitous, by some process or other, to narrow the distance between the oceans, and cause them to mingle their commerce, if not their waters, by a readier passage than that through the storms of the Southern seas, or over many a granite mountain for wearisome months, through the heart of the continent itself.

In Yankee ingenuity there is that which is illimitable, and it is baffled by no combinations or difficulties whatever. That it can discourse at a thousand or five thousand miles, with the same facility and rapidity as across a chamber, and without an extra effort of breath, is a mere trifle. Our children shall throw away the telegraph as a play-thing and a bauble, with the same contempt that Jupiter's lazy, inert log was trampled upon, in days of yore, by the revellers, at first impressed with such awe of its presence.

There is, perhaps, no better mode of accounting for the extraordinary fact, that, despite of all the glorious achievements of science

* We will supply a large number of the Reviews in which Mr. Weller's articles are contained, without charge, for general distribution, if application be made post paid. It is thus we can extend the usefulness of our work, and perhaps elicit additional support from the friends of the cause. Of this last we are much in need.—[ED.]

within the past few years, the moon still continues at the provoking and inapproachable distance of some two hundred and odd thousand miles, than this, that the same science has almost irresistibly demonstrated this satellite, "uninhabited and uninhabitable." Had our telescopes, on the contrary, exhibited green fields, and fertile plains, and pleasant water-courses, and broad cultivated acres, and a population evidently in want of cotton goods, clocks, ice, razor strops, and pen-knives, some of our indefatigable traders had made explorations thitherward long ago, and ten to one by a new-fangled process in galvanism, magnetism, or any other *ism*, as yet undreamed of in philosophy, because unneeded—discovered a *gap* somewhere, in space, through which a pedlar at least could find his way, and bring back to his countrymen the gladsome news, that their celestial highnesses were willing and anxious for a treaty of reciprocal amity and commerce! A colony, a revolution, annexation, becomes then but matters of course!

But we have not the time for a lengthened paper, though the subject might be regarded inexhaustible; and we have already fallen into a vein which ill comports with the gravity of the present occasion.

Our object now is, but to present a few pages upon the proposed connection between the oceans, in addition to what we have so elaborately published in previous volumes of the Review, and also, to furnish the latest and most reliable information in regard to the character, resources, etc., of New-Mexico and California.

We begin by introducing the letter of Lieut. Maury to the Hon. John C. Calhoun, which the writer kindly furnished us some time ago, but which has been delayed for various reasons until now. It is too important, however, to be omitted altogether.*

NATIONAL OBSERVATORY, *March 29, 1848.*

DEAR SIR:—I have the pleasure of sending you, as you requested I would do, a chart showing the relative distances to Monterey and the Columbia river from some of the principal points on the Atlantic coast. I have added such other information as, in my judgment, is calculated to throw light on the interesting subject, as to the best route across the country for reaching, by railroad, the Pacific coast of the United States.

I am clearly of the opinion that a railroad, through the heart of the country to the most convenient point of our Pacific coast, is greatly more in accordance with the true interests of the United States, than any route by canal or railroad that can be constructed across the narrow neck of land between North and South America.

A chief value of a railroad or canal consists in its collateral advantages, so to speak, by which I mean, the advantages which the country and the people, in the vicinity of the improvement, derive from it; such as the increased value of land and property of various kinds.

* For various papers, with elaborate statistics in regard to the different proposed modes of communication across the continent, the reader will consult the 1st, 2d, 3d, 4th, and 5th volumes of the Commercial Review. In these papers the subject has been presented in almost every possible point of view, and by the ablest writers.

The increased value which such property has derived from the railroads and canals in the United States, exceeds, I suppose, the original cost of the works themselves. This, therefore, may be considered a permanent value attached to the property of our fellow-citizens, which no reverse of fortune, no enactment of laws, nothing but a destruction of the works themselves, can ever destroy.

A canal between the two continents would not pass through the United States territory, and consequently the citizens of the United States would derive no such collateral advantages from it, nor her statesmen the prerogative of taxing such increased value for the revenues of the country; but they would derive them abundantly from a railroad running through the heart of the Union, and connecting its Atlantic with its Pacific ports.

In this fact is included one of the many reasons which induced me to favor a railroad across the country, in preference to a canal out of the country, for connecting the two oceans.

The question, therefore is: Where shall the railroad begin on the Atlantic, and where shall it end on the Pacific?

Unfortunately, the present state of topographical information as to the several routes that have been proposed for reaching the Pacific by railroad, is not sufficient to afford a satisfactory reply to this question. I propose to consider it, therefore, only in a geographical and commercial point of view, leaving the final decision of the question to hydrographers and engineers, after they shall have made the necessary examinations and surveys.

If we continue to increase our tonnage for the next two or three years at the rate of increase for the last two or three, the shipping of the United States will then exceed that of Great Britain, and the commercial supremacy will be ours, so far, at least, as the business of fetching and carrying is concerned.

If you will examine the accompanying chart, you will observe that I have drawn, *geographically*, the dividing line of commerce between England and the Atlantic ports of the United States. Any point in this line is equi-distant from us and from England; consequently England is nearer to all places, including the ports of Europe, the Mediterranean, and of Africa north of the equator, which are to the east of that dividing line, and *geographically* speaking, therefore, can meet us on that side of it with advantage; whereas, all places on this side of that line, including her American colonies, the West Indies, and the States of Central and South America as far as the equator, are, *geographically*, more favorably situated for commerce with the United States than with England.

Now it so happens that this dividing line crosses the equator at what may be considered the great thoroughfare of vessels trading to the south of it, whether they be English or American, or whether they be bound around Cape Horn or the Cape of Good Hope. The winds are such as to make this the common and best place of crossing for all such vessels.

Consequently, *geographically* speaking, the ports of Brazil, of the Pacific Ocean, China, and the East Indies, are as convenient to the

Atlantic states of the Union as they are to England; and the merchandise of the two countries may be said to meet there precisely on equal terms.

Hitherto, the great channels of trade have led to Europe, yet, notwithstanding that the position of England is much more central than that of the United States with regard to Europe, (the vessels of the former making, in a week, voyages which it takes ours months to accomplish,) we have, under these disadvantages, never ceased to gain on our competitor, and are now about to pass her, with our ships, in the commercial race.

The coasts of Oregon and California are just beginning to feel the energy of American enterprise, and are fast filling up with our citizens. Where they go, there commerce will come. The peopling of these coasts will greatly enlarge the commercial limits of the United States; extending them from lines into a greatly elongated ellipse with its conjugate centres, one on the Pacific, the other on the Atlantic.

Having determined what port on the Pacific offers the most advantages for the commercial focus there, it will then be easy to project the major axis of this new commercial curve; for the line across the country which joins these two centres, will show, geographically, the best route for a railroad between the two oceans.

The shortest distance between two places that are not on the equator, or in the same longitude, is the arc of a great circle included between them; and this arc appears on the chart as a curve. I have drawn such curves on the chart, and called them great circle routes, because they show the route by which a traveller may go from place to place by accomplishing the smallest number of miles possible, supposing he could follow a line through the air.

You will observe that the great circle, which shows the shortest navigable route between Chili, all the ports of Peru, Ecuador, Central America and Mexico, passes so near to Monterey, that if a steamer bound from Chili to Shanghai, in China, were to pursue the shortest route which it is possible to go, she would make Cape St. Lucas, in Lower California, and might touch at San Diego, Monterey, or San Francisco, by going less than 100 miles out of her way.

But if the point of departure were Panama, then it would be 1,000 miles nearer to take the great circle via California, than to follow the straight compass course by way of the Sandwich Islands.

Monterey or San Francisco, therefore, may be regarded as the great half-way house on the commercial road between Pacific America and the Indies; and this route as the commercial circle of the Pacific Ocean.

It will be observed that Astoria, in Oregon, occupies by no means such a central position with regard to the commerce of the world.

The line, commencing on the Pacific coast midway between Monterey and the mouth of the Columbia river, and drawn to Philadelphia, I have called the dividing line of travel between Monterey and the mouth of the Columbia. It is so drawn through the country.

that any given point on it is equi-distant from those two places, so that a traveller who starts from any point to the south of this line is nearer to Monterey; but if he start from a point to the north of it, he is nearer to the mouth of the Columbia.

TABLE OF DISTANCES FROM THE ENGLISH CHANNEL.

To Boston (shortest navigable distance for steamers).....	2,670 miles.
Boston, via Albany and the lakes, to Chicago,.....	1 000
Chicago, by an air line, to Columbia river,.....	1,650
Total,.....	5,320
From English Channel, via Philadelphia & Baltimore, to Monterey,.....	5,100
“ English Channel to Charleston, S. C., (by water).....	3,360
“ Charleston to Memphis (rail road).....	510
“ Memphis to Monterey (air line).....	1,500
Total,.....	5,370

It thus appears that Monterey is quite as Central to the European travel as is the mouth of the Columbia, with this advantage, however: the lakes are frozen up half the year, when the Columbia route is impassable; whereas, if the travel from Europe come as far south as Philadelphia, Monterey then is the most convenient port. In truth, Chicago is quite as near to Monterey as to the mouth of the Columbia.

While Monterey is, therefore, altogether as convenient a halting-place as the Columbia river for travellers from any part of Europe to China, it has decidedly the advantage with regard to the travel from three-fourths of the states of the Union, from Brazil, the West Indies, and even from the Pacific ports of South America.

Were a railroad constructed from Memphis to Monterey, passengers from Chili, Peru, &c., on arriving at Panama, would, instead of continuing on in the Pacific to California, save two or three days by crossing over to Chagres, taking a steamer thence to New-Orleans, and up the river to the Memphis and Monterey railroad, and so across the country.

For this reason, therefore, the route to China, via Charleston or New-Orleans, to Memphis, and thence to Monterey, would, for all the travel to the south of us, be hundreds of miles nearer than the route up to Chicago and thence to the Columbia river; nearer for most of the states of the confederacy, and as near for the rest.

The harbors of San Francisco and Monterey are good, and easy of ingress and egress. The mouth of the Columbia is difficult both of ingress and egress. In 1846 Lieut. Howison, one of the most accomplished seamen in the navy, was wrecked in attempting to get to sea from that river. He chartered another vessel for himself and crew to get to Monterey, 600 miles; and though in sight of the open sea, and drawing but eight feet of water, he was detained there sixty-

two days, waiting for an opportunity to cross the bar. He was wrecked where the Exploring Expedition found water enough to float a 74.*

Vessels in distress off the mouth of the Columbia river have been baffled in their attempts to enter, and finally, after sundry trials, have found themselves compelled to run down to the ports of California, where they are sure of getting an anchorage.

The railroad to the Pacific should terminate at that port which presents the most advantages for our future dock-yard and great naval station on the Pacific. That port is not the Columbia river, for the reasons just stated. Moreover, the mouth of that river will be overlooked by the English from the excellent ports of Vancouver's Island and the Straits of Fuca. While our crippled vessels should be standing off and on, waiting to get in, they would fall an easy prey to inferior British cruisers, which in safety could watch their movements from the Straits of Fuca.†

Monterey and San Francisco are beyond the reach of such surveillance; moreover, they are in a better climate, and are midway our line of Pacific coast. They are in a most commanding position. During the naval operations in the Pacific against Mexico, our men-of-war beat out of the harbor of San Francisco in a gale of wind, so easy is it of ingress and egress.

The harbors of California are convenient for, and are even now visited by, our whalemén. Columbia river is not. There is a fleet in the Pacific of 300 vessels, engaged in this business, manned by six or eight thousand of the best seamen of America.

In money and in kind they expend, annually, among the islands

*"The Cadboro' anchored in Baker's Bay (mouth of the Columbia river) November 17, 1846, where we remained pent up by adverse winds and a turbulent sea on the bar until the 18th January. Her master, an old seaman, had been navigating this coast and river for the last eighteen years, and his vessel drew but eight feet of water; yet in this long interval of sixty two days he could find no opportunity of getting to sea safely. This is, in itself, a commentary upon the dangerous character of the navigation of the mouth of the Columbia."—[Report of Lieut. Niel M. Howison, U. S. N., House of Reps., 30th Congress, 1st Session, Mis. No. 29.]

"I lay at anchor in Baker's Bay, some three hundred yards inside the Cape, from November 17, 1846, until January 18, 1847; and although we were unfortunately destitute of barometer and thermometer, we had a good opportunity of observing, during these two winter months, the wind and weather. The heavens were almost always overcast; the wind would spring up moderately at east, haul within four hours, to south-east, increasing in force and attended with rain. It would continue at this point some twenty hours, and shift suddenly in a hail storm to the south-west; whence, hauling westwardly and blowing heavy, accompanied with hail and sleet, it would give us a continuance of bad weather for three or four days, and force the enormous Pacific swell to break upon the shore with terrific violence, tossing its spray over the tops of the rocks, more than two hundred feet high. A day of moderate weather, with the wind south-east, might succeed this; but before the sea on the bar would have sufficiently gone down to render it passable, a renewal of the south easter would begin, and go on around the compass as before."—[Ib.]

†"A very snug harbor has, within a few years, been sounded out and taken possession of by the Hudson's Bay Company on the south-eastern part of Vancouver's Island. They have named it Victoria, and it is destined to become the most important British seaport contiguous to our territory. Eighteen feet water can be carried into its inmost recesses, which is a fine large basin. There is, besides, pretty good anchorage for frigates outside the basin. The Company are making this their principal shipping port; depositing, by means of small craft, during the summer, all their furs and other articles for the English market at this place, which is safe for their large ships to enter during the winter season. They no longer permit them to come into the Columbia between November and March."—[Lieut. Howison's Report.]

and ports of the Pacific not less than one million of dollars. The facilities which a railroad to California would offer in enabling them to overhaul, refit, and communicate with friends and owners in New-England, would attract this whole fleet there; and this vast amount of money would be expended in our own country and among our own citizens, instead of being disbursed, broadcast as it now is, over that wide ocean. As long as there are breakers and a bar at the mouth of the Columbia, there can be in that harbor no attraction for our whale ships.

The coast of California is a favorite place of resort for the whale. They come there to breed.

The chart has two small circles of a radius of 3,000 miles each; one drawn from the mouth of the Columbia as a centre, the other from Monterey. The latter, from its facilities of ingress or egress, is, in a geographical position to command the trade with all the places within these circles, except, perhaps, the ports of British and Russian America. For six months of the year, the difficulties in crossing the bar of the Columbia would place these places nearer to the ports of California by days, if not by weeks and months.

The chart also exhibits the geographical dividing lines of travel and of commerce. The broken line, through the Island of Japan, shows the dividing line of travel from London, by the overland route, to India, and from London through the United States, by railroad from Charleston, via. Memphis, to Monterey. The nearest route to London, from all places to the east of this line, is through the United States; but from all places to the west of it, the nearest route is through the Red Sea and across the isthmus of Suez. These lines, as before stated, are all drawn without regard to time. They are mere geographical lines, intended to represent distance in *nautical* miles. Were the railroad across the country completed, and the lines drawn with regard to time, they might probably be extended a thousand miles or two further to the westward; for much of the distance to be overcome by the overland route is by water, and there is much less rail road travelling by that route than there would be by a railroad across the United States.

A passenger can accomplish as many miles in two days by railroad as he can in a week by water.

The other broken line shows the dividing line of travel between London, via. the overland route, and this part of the country, via. the Atlantic and Pacific Rail-Road.

The continuous and most westerly line shows the dividing line of commerce between England, on the one hand, and our Pacific ports on the other, supposing the English ships to pass, as they have to do, the Cape of Good Hope.

This line exhibits many interesting facts, consequences and significations. Among them, it shows that the United States are now in a position which will soon enable them, *geographically*, to command the trade of the entire east; and that, commercially speaking, our country is in the centre of the people of the earth, and occupies a position for trade and traffic with them which no nation that ever existed has held.

Hitherto, in all parts of the world, except Europe and the West Indies, the ships of the two great competitors on the ocean have met on barely equal terms. An American and a British ship met in India, China, New-Holland, the islands of the Pacific, or the ports of South America. One was owned in London or Liverpool, the other in some one of our Atlantic ports. To reach home, they both had to pursue the same route and sail the same number of knots. But now that Oregon and California are *Americanized*, all of these ports are nearer; and the chief among them, as Bombay, Calcutta, Singapore, the ports of China, Japan, New-Holland, Australia, Polynesia and the islands of the east, many thousand miles nearer to the United States than they are to England.

TABLE OF DISTANCES BY SEA.

	To England.	To Ports of California.
From Persian Gulf,.....	11,300	10,400
" Bombay,.....	11,500	9,800
" Calcutta,.....	12,200	9,300
" Singapore,.....	12,300	7,400
" Canton,.....	13,700	6,100
" Shanghai,.....	14,400	5,400
" Jeddo,.....	15,200	4,500
" New-Guinea,.....	14,000	6,000
" N. W. point of N. Holland,...	11,800	7,800
" N. E. " ".....	13,500	6,900
" New-Zealand,.....	13,500	5,600

From Memphis, a centre point in the immense valley of the West, and one on the great natural and national highway from the Gulf to the Lakes, the distance, via. Panama and the Sandwich Islands, (the usual route,) to China, is 11,700 miles; but by the proposed railroad to Monterey and the great circle, thence to China, the distance is but 6,900 miles.

A rail-road across the country, in this direction, would, therefore, it may be observed, shorten the present and nearest practicable route to China near 5,000 miles; it would place us before the commercial marts of *six hundred millions* of people, and enable us, geographically, to command them. Open the needful channels, unbride commerce, leave it to the guidance of free trade, and who shall tell the commercial destiny of this country!

Rightly and wisely profiting by the advantages which are now opening to us, how long will it be before our sturdy rival will cease to be regarded as such, and when we shall have no competitor for maritime supremacy among nations!

From Monterey to Shanghai is 5,400 miles; mid-way between the two, and right on the way-side, are the Fox or Eleutian Islands, with good harbors, where a depot of coal may be made for a line of steamers, for the establishment of which, I understand, Mr. King, the Chairman of the Committee on Naval Affairs, is preparing a bill.

Coal has been found on the surface, at San Diego and San Francisco, and Vancouver's* or Quadra Island. Formosa and the Isl-

*Excellent coal has been found here. It is used by the English steamers, and is put on board at a mere nominal price.

ands of Japan abound with the most excellent qualities of this mineral. Supposing the vessels to be put upon this line to perform not better than the "Great Western," and that the rail-road from Charleston, on the Atlantic, be extended to Monterey, on the Pacific, you might then drink tea made in Charleston within the same month in which the leaf was gathered in China.

The passage from Shanghai, allowing a day for coaling at the Fox Islands, can be made in twenty-six days to Monterey, and thence to Charleston by rail-road, at the English rate of forty miles an hour, in less than three days.

Hydrographical surveys, and topographical reconnoissances may show San Diego or San Francisco to be the best terminus for the great rail-way. I have spoken of Monterey merely from its *geographical* position. San Francisco is a better harbor, and has, in its rear, a more fertile country. But whichever of the three be adopted, the selection will not alter the point I have been endeavoring to establish.

A rail-road from Charleston to Tennessee is already completed. Memphis is above the yellow fever region of the Mississippi Valley. It is on the great river and in a central position. A road thence would cross the head waters of the Arkansas, the Rio Grande and the Colorado. It would facilitate the overland trade with Mexico, and perhaps be the principal channel of foreign commerce for her people.

Large amounts of bullion are annually shipped from Western Mexico, in British ships of war, for England. Owing to the route, and the uncertainties as to the time when a vessel of war may come for it, it may be assumed that this bullion does not reach England for eight or ten months after it is taken from the mines; during all of which time it is of course idle. Moreover, it pays a freight of two per cent. to the British officer and Greenwich Hospital for conveying it in one of Her Majesty's vessels. Now all this bullion would come, as fast as it is taken from the mines, over this road, and would perhaps be coined in our own mints instead of those of Europe.

This route, as compared with one to the Columbia river, is most convenient for a large portion of the citizens of Pennsylvania, all of Delaware, Maryland, Ohio, Indiana, Illinois, Missouri, and all of the states to the south of them; and, considering the present routes, quite as convenient to the people of New-England as is the proposed route to the Columbia.

Besides, this last will be obstructed by snow and ice in the winter; the other never. Therefore, California offers the most convenient terminus for the commerce and business of all the states, and the most desirable one for the purposes of the general government.

There is a line of steamers already in operation from Valparaiso, Lima, Guayaquil, and the intermediate ports to Panama.

Under Mr. King's bill of the last Congress, contracts have been made for another line to connect with this, to run to the mouth of Columbia, and touch at Monterey or San Francisco. From Panama

to China, via. Monterey, is 8,600 miles, and from Panama by water to Monterey, is 3,200 miles. Thus it will be observed that the steam communication has already been provided for more than one-third of the distance from Panama to China.

A railroad to Monterey, and a line of steamers thence to China, would place our citizens only half the distance that they now are, and without such rail-road must continue to be, from Japan and the Celestial Empire.

The most equitable location of a great national railway, to be constructed for the convenience of all the states, from the banks of the Mississippi to the shores of the Pacific, would be along the line which divides the United States' territory west of the Mississippi into two equal parts. The main trunk would then be in the most favorable position for receiving lateral branches from all of the states hereafter to be formed out of that territory. But the ports on the Pacific, and the character of the route, do not admit of such a location.

I have endeavored, as you suggested, to determine the geographical centre of the present *states* of the confederacy.

By one method, Memphis is as near that centre as may be; by the other it falls in Kentucky.

A line drawn diagonally across the states, from the north-east corner of Maine, to the south-west corner of Texas, intersects another from southern Florida to the north-west corner of Iowa, a few miles from Memphis; and Memphis is just about half way between the mouth of the Mississippi and the head of the Lakes, counting from Lake Michigan.

But if we take two other lines: one dividing the territory comprehended within the states from north to south, the other from east to west, they will cross each other in Kentucky, and about midway a line between Nashville and Louisville. These are the two geographical centres of the states of the Union.

Now, if we take a point about midway between Memphis and Louisville, we shall have what, for practical purposes, may be called the territorial centre of the *states* of the Union. I have marked this point A, on the chart. It is near the mouth of the Cumberland. The centre of population is about the same parallel, but considerably to the eastward.

The great circle from this territorial centre to San Francisco, crosses the Mississippi just above the mouth of the Ohio, and crosses the edge of the Kansas valley. The distance of San Francisco from the Mississippi at this point, is 1,560 *nautical*, or 1,760 statute miles.

Were the country equally favorable, this would certainly be the most advantageous, because it would be the most convenient route for all the states. It will be the business of the topographer, the engineer, and the hydrographer on the Pacific, to determine the most feasible line, and the precise location of this great national highway.

There is, however, another light in which this subject should be

considered. A rail-road to the Pacific is eminently a military road ; and in the selection of a route, and a terminus for it, an eye should be had to its bearings as well to the common defence as to the general welfare.

Vancouver's Island abounds in excellent harbors. Coal of superior quality has recently been found there, cropping out in great quantities on the surface. The English steamers on that coast use it, and pronounce it excellent.* The *Cormorant* procured it at four shillings per ton, and took specimens of it to England. It is so accessible that the Indians mine it, and deliver it on board the Hudson's Bay Company's steamers at a mere nominal charge.

That island is in a position which enables the power that holds it to command the Straits of Fuca and the mouth of the Columbia more effectually, even, than Cuba, in the hands of a rival, would control the mouths of the Mississippi. By treaty, Vancouver's Island belongs to the English. In view of these facts, no one with a military eye in his head would think of fixing the terminus of the great national highway, through which we aim to control the trade of the east, under the very guns of our rival. Vancouver's Island enables England to command both the Straits of Fuca and the mouth of the Columbia.

The mouth of that river can never become a naval station of much importance to us. It is too near Vancouver's Island, which is to be the Portsmouth of England in the Pacific. Its approaches are exposed and difficult—its egress dangerous. It is too far from the ports of California and the coast to be defended.

San Francisco will probably be the centre of our naval operations there. It is in a central, and therefore commanding position. It offers many facilities which Astoria does not. Suppose Cuba belonged to Great Britain, and we were just beginning with a system of national defences for our Atlantic coast: it would be quite as reasonable to expect our ships from Pensacola to pass Havana and protect the coasts of New-York, in a war with England, as it would be to expect them to come from the Columbia river, overlooked, as it will be, by the English from Vancouver's Island, and give security to the ports and coasts of California.

Our Pacific coast is about 1000 miles in length. San Francisco is midway between its southern boundary and Vancouver's Island, and, in a military point of view, is in a position to command eight hundred of the thousand miles ; whereas Puget's Sound and Columbia river, owing to the close proximity of Vancouver's Island and the dangerous bars of the river, are incapable of commanding so much as their three marine leagues each.

Respectfully, &c.,

M. F. MAURY.

HON. JOHN C. CALHOUN, *U. S. Senate Chamber.*

CALIFORNIA, ETC.

Colonel Fremont, the indefatigable explorer and chivalrous soldier, whose resignation from the army is a subject of so much regret, has lately published a map of this region, accompanied with a sketch of

the country, possessing the liveliest interest. The pamphlet has been issued from the press but a few days, and is but the pioneer of a more extensive and elaborate work upon the same subject. We design a few extracts, &c.

Colonel Fremont begins with the Sierra, a part of the great mountain range which extends from the peninsula of California to Russian America, with no other gaps than those where the Columbia and Frazer's Rivers find their passage. "That part of the range which traverses Alta California, is called the *Sierra Nevada*, dividing California into two parts, and exercises a decided influence on the climate, soil, and productions of each."

East of the Sierra Nevada, and between it and the Rocky Mountains, is an extraordinary region, termed the GREAT BASIN. "It is a singular feature: a basin of some five hundred miles diameter every way, between four and five thousand feet above the level of the sea, shut in all around by mountains, with its own system of lakes and rivers, and having no connexion whatever with the sea. Partly arid and sparsely inhabited, the general character of the GREAT BASIN is that of a desert, but with great exceptions, there being many parts of it very fit for the residence of a civilized people; and of these parts, the Mormons have lately established themselves in one of the largest and best. Mountain is the predominating structure of the interior of the Basin, with plains between—the mountains wooded and watered, the plains arid and sterile." In this GREAT BASIN are situated the vast *Salt and Utah Lakes*, besides numerous smaller bodies of water. The *Humboldt River*, within the same limits, is the most important. "This river possesses qualities which, in the progress of events, may give it both value and fame. It lies on the line of travel to California and Oregon, and is the best route now known through the Great Basin, and the one travelled by emigrants. Its direction, nearly east and west, is the right course for that travel. It furnishes a level, unobstructed way for nearly three hundred miles, and a continuous supply of the indispensable articles of water, wood, and grass. Its head is towards the Great Salt Lake, and consequently towards the Mormon settlement, which must become a point in the line of emigration to California and the lower Columbia. Its termination is within fifty miles of the base of the Sierra Nevada, and opposite the Salmon Trout river pass—a pass only seven thousand two hundred feet above the level of the sea, and less than half that above the level of the Basin, and leading into the valley of the Sacramento, some forty miles north of Nueva Helvetia. These properties give to this river a prospective value in future communications with the Pacific Ocean; and the profile view on the north of the map shows the elevations of the present travelling route, of which it is a part, from the South pass, in the Rocky Mountains, to the bay of San Francisco."

The winter of 1843, '44, within the basin, says Col. Fremont, was remarkable for the same open, pleasant weather, rarely interrupted by rain or snow. In fact, there is nothing in the climate of this great interior region, elevated as it is, and surrounded and traversed

by snowy mountains, to prevent civilized man from making it his home, and finding in its arable parts the means of a comfortable subsistence, and this the Mormons will probably soon prove, in the parts about the Great Salt Lake. The progress of their settlement is already great. On the first of April of the present year, they had 3,000 acres in wheat; seven saw and grist-mills; seven hundred houses in a fortified enclosure of sixty acres, and stock and other accompaniments of a flourishing settlement.

To the westward of the *Sierra Nevada*, and reaching to the sea, is another region of California, considered by Col. Fremont. Its breadth varies between 150 and 200 miles, and the area contained is 100,000 square miles.

West of the *Sierra Nevada*, and between that mountain and the sea, is the second grand division of California, and the only part to which the name applies in the current language of the country. It is the occupied and inhabited part, and so different in character—so divided by the mountain wall of the *Sierra* from the Great Basin above—as to constitute a region to itself, with a structure and configuration—a soil, climate, and productions—of its own; and as northern Persia may be referred to as some type of the former, so may Italy be referred to as some point of comparison for the latter. North and south, this region embraces about ten degrees of latitude—from 32°, where it touched the peninsula of California, to 42°, where it bounds on Oregon. East and west, from the *Sierra Nevada* to the sea, it will average, in the middle parts, 150 miles; in the northern parts 200—giving an area of above one hundred thousand square miles. Looking westward from the summit of the *Sierra*, the main feature presented is the long, low, broad valley of the Joaquin and Sacramento rivers—the two valleys forming one—five hundred miles long and fifty broad, lying along the base of the *Sierra*, and bounded to the west by the low coast range of mountains, which separates it from the sea. Long dark lines of timber indicate the streams, and bright spots mark the intervening plains. Lateral ranges, parallel to the *Sierra Nevada* and the coast, make the structure of the country, and break it into a surface of valleys and mountains—the valleys a few hundred, and the mountains two to four thousand feet above the sea. These form greater masses, and become more elevated in the north, where some peaks, as the *Shastah*, enter the regions of perpetual snow. Stretched along the mild coast of the Pacific, with a general elevation in its plains and valleys of only a few hundred feet above the level of the sea—and backed by the long and lofty wall of the *Sierra*—mildness and geniality may be assumed as the characteristic of its climate. The inhabitant of corresponding latitudes on the Atlantic side of this continent, can with difficulty conceive of the soft air and southern productions under the same latitudes in the maritime region of Upper California. The singular beauty and purity of the sky in the south of this region is characterised by Humboldt as a rare phenomenon, and all travellers realise the truth of his description.

The present condition of the country affords but slight data for

forming correct opinions of the agricultural capacity and fertility of the soil. Vancouver found, at the mission of San Buenaventura, in 1792, latitude $34^{\circ} 16'$, apples, pears, plums, figs, oranges, grapes, peaches and pomegranates, growing together with the plantain, banana, cocoa-nut, sugar-cane and indigo, all yielding fruit in abundance and of excellent quality. Humboldt mentions the olive-oil of California as equal to that of Andalusia, and the wine like that of the Canary Islands. At present, but little remains of the high and various cultivation which had been attained at the missions. Under the mild and paternal administration of the "*Fathers*," the docile character of the Indians was made available for labor, and thousands were employed in the fields, the orchards, and the vineyards. At present, but little of this former cultivation is seen. The fertile valleys are overgrown with wild mustard; vineyards and olive orchards, decayed and neglected, are among the remaining vestiges; only in some places do we see the evidences of what the country is capable. At San Buenaventura, we found the olive trees, in January, bending under the weight of neglected fruit; and the mission of San Luis Obispo (latitude 35°) is still distinguished for the excellence of its olives, considered finer and larger than those of the Mediterranean.

The productions of the south differ from those of the north and of the middle. Grapes, olives and Indian corn have been its staples, with many assimilated fruits and grains. Tobacco has been recently introduced; and the uniform summer heat which follows the wet season, and is uninterrupted by rain, would make the southern country well adapted to cotton. Wheat is the first product of the north, where it always constituted the principal cultivation of the missions. This promises to be the grain-growing region of California. The moisture of the coast seems particularly suited to the potato, and to the vegetables common to the United States, which grow to an extraordinary size.

Perhaps few parts of the world can produce in such perfection so great a variety of fruits and grains as the large and various region enclosing the bay of San Francisco and drained by its waters. A view of the map will show that region and its great extent, comprehending the entire valleys of the Sacramento and San Joaquin, and the whole western slope of the Sierra Nevada. General phrases fail to give precise ideas, and I have recourse to the notes in my journal to show its climate and productions by the test of the thermometer and the state of the vegetable kingdom.

VALLEYS OF THE SACRAMENTO AND SAN JOAQUIN.

These valleys are one, discriminated only by the names of the rivers which traverse it. It is a single valley—a single geographical formation—near 500 miles long, lying at the western base of the Sierra Nevada, and between it and the coast range of mountains, and stretching across the head of the bay of San Francisco, with which a *delta* of twenty-five miles connects it. The two rivers,

San Joaquin and Sacramento, rise at opposite ends of this long valley, receive numerous streams, many of them bold rivers, from the Sierra Nevada, become themselves navigable rivers, flow toward each other, meet half way, and enter the bay of San Francisco together, in the region of tide-water, making a continuous water line from one end to the other.

The valley of the San Joaquin is about 300 miles long and 60 broad, between the slopes of the coast mountain and the Sierra Nevada, with a general elevation of only a few hundred feet above the level of the sea. It presents a variety of soil, from dry and unproductive to well-watered and luxuriantly fertile. The eastern (which is the fertile) side of the valley is intersected with numerous streams, forming large and very beautiful bottoms of fertile land, wooded principally with white oaks, (*quercus longiglanda*, Torr. and Frem.) in open groves of handsome trees, often five or six feet in diameter, and sixty to eighty feet high. Only the larger streams, which are fifty to one hundred and fifty yards wide, and drain the upper parts of the mountains, pass entirely across the valley, forming the *Tulare* Lakes and the San Joaquin river, which, in the rainy season, make a continuous stream from the head of the valley to the bay. The *foot hills* of the Sierra Nevada, which limit the valley, make a woodland country, diversified with undulating grounds and pretty valleys, and watered with numerous small streams, which reach only a few miles beyond the hills, the springs which supply them not being copious enough to carry them across the plains. These afford many advantageous spots for farms, making sometimes large bottoms of rich, moist land. The rolling surface of the hills presents sunny exposures, sheltered from the winds, and having a highly favorable climate and suitable soil, are considered to be well adapted to the cultivation of the grape, and will probably become the principal vine growing region of California. The uplands bordering the valleys of the large streams, are usually wooded with evergreen oaks; and the intervening plains are timbered with groves or belts of evergreen and white oaks among prairie and open land. The surface of the valley consists of level plains along the Tulare Lakes and San Joaquin river, changing into undulating and rolling ground nearer the foot hills of the mountains.

BAY OF SAN FRANCISCO AND DEPENDENT COUNTRY.

The bay of San Francisco has been celebrated, from the time of its first discovery, as one of the finest in the world, and is justly entitled to that character even under the seaman's view of a mere harbor. But when all the accessory advantages which belong to it—fertile and picturesque dependent country; mildness and salubrity of climate; connexion with the great interior valley of the Sacramento and San Joaquin; its vast resources for ship timber, grain and cattle—when these advantages are taken into the account, with its geographical position on the line of communication with Asia, it rises into an importance far above that of a mere harbor, and deserves a particular notice in any account of maritime California. Its latitudinal position is that of Lisbon; its climate is that of southern Italy; settle-

ments upon it for more than half a century attest its healthiness; bold shores and mountains give it grandeur; the extent and fertility of its dependent country give it great resources for agriculture, commerce, and population.

The bay of San Francisco is separated from the sea by low mountain ranges. Looking from the peaks of the Sierra Nevada, the coast mountains present an apparently continuous line, with only a single gap, resembling a mountain pass. This is the entrance to the great bay, and is the only water communication from the coast to the interior country. Approaching from the sea, the coast presents a bold outline. On the south, the bordering mountains come down in a narrow ridge of broken hills, terminating in a precipitous point, against which the sea breaks heavily. On the northern side, the mountain presents a bold promontory, rising in a few miles to a height of two or three thousand feet. Between these points is the strait—about one mile broad, in the narrowest part, and five miles long from the sea to the bay. Passing through this gate,* the bay opens to the right and left, extending in each direction about 35 miles, having a total length of more than 70, and a coast of about 275 miles. It is divided, by straits and projecting points, into three separate bays, of which the northern two are called San Pablo and Suisoon bays. Within, the view presented is of a mountainous country, the bay resembling an interior lake of deep water, laying between parallel ranges of mountains. Islands, which have the bold character of shores—some mere masses of rock, and others grass covered, rising to the height of three and eight hundred feet—break its surface, and add to its picturesque appearance. Directly fronting the entrance, mountains a few miles from the shore rise about 2,000 feet above the water, crowned by a forest of the lofty cypress, which is visible from the sea, and makes a conspicuous landmark for vessels entering the bay. Behind, the rugged peak of *Mount Diavolo*, nearly 4,000 feet high, (3,770,) overlooks the surrounding country of the bay and San Joaquin. The immediate shore of the bay derives, from its proximate and opposite relation to the sea, the name of *contra costa* (counter-coast, or opposite coast.) It presents a varied character of rugged and broken hills, rolling and undulating land, and rich alluvial shores backed by fertile and wooded ranges, suitable for towns, villages, and farms, with which it is beginning to be dotted. A low alluvial bottom land, several miles in breadth, with occasional open woods of oak, borders the foot of the mountains around the southern arm of the bay, terminating on a breadth of twenty miles in the fertile valley of St Joseph, a narrow plain of rich soil, lying between ranges from two to three thousand feet high. The valley is openly wooded with groves of oak, free from underbrush, and after the spring rains covered with grass.

* Called *Crysoptila* (Golden gate) on the map, on the same principle that the harbor of *Byzantium* (Constantinople afterwards) was called *Chrysoceras* (golden horn.) The form of the harbor, and its advantages for commerce, (and that before it became an entrepot of eastern commerce,) suggested the name to the Greek founders of Byzantium. The form of the entrance into the bay of San Francisco, and its advantages for commerce, (Asiatic inclusive,) suggest the name which is given to this entrance.

Taken in connexion with the valley of San Juan, with which it forms a continuous plain, it is fifty-five miles long and one to twenty broad, opening into smaller valleys among the hills. At the head of the bay it is twenty miles broad, and about the same at the southern end, where the soil is beautifully fertile, covered in summer with four or five varieties of wild clover several feet high. In many places it is overgrown with wild mustard, growing ten or twelve feet high, in almost impenetrable fields, through which roads are made like lanes. On both sides the mountains are fertile, wooded, or covered with grasses and scattered trees. On the west it is protected from the chilling influence of the north-west winds by the *cuesta de los gatos*, (wild-cat ridge,) which separates it from the coast. This is a grassy and timbered mountain, watered with small streams, and wooded on both sides with many varieties of trees and shrubbery, the heavier forests of pine and cypress occupying the western slope. Timber and shingles are now obtained from this mountain; and one of the recently discovered quicksilver mines is on the eastern side of the mountain, near the Pueblo of San Jose. This range terminates on the south in the *Anno Nuevo* point of Monterey bay, and on the north declines into a ridge of broken hills about five miles wide, between the bay and the sea, and having the town of San Francisco on the bay shore, near its northern extremity.

Sheltered from the cold winds and fogs of the sea, and having a soil of remarkable fertility, the valley of St. Joseph (San Jose) is capable of producing in great perfection many fruits and grains which do not thrive on the coast in its immediate vicinity. Without taking into consideration the extraordinary yields which have sometimes occurred, the fair average product of wheat is estimated at fifty fold, or fifty for one sown. The mission establishments of *Santa Clara* and *San Jose*, in the north end of the valley, were formerly, in the prosperous days of the missions, distinguished for the superiority of their wheat crops.

The slope of alluvial land continues entirely around the eastern shore of the bay, intersected by small streams, and offering some points which good landing and deep water, with advantageous positions between the sea and interior country, indicate for future settlements.

The strait of *Carquines*, about one mile wide and eight or ten fathoms deep, connects the San Pablo and Suisoon bays. Around these bays smaller valleys open into the bordering country, and some of the streams have a short launch navigation, which serves to convey produce to the bay. Missions and large farms were established at the head of navigation on these streams, which are favorable sites for towns or villages. The country around the Suisoon bay presents smooth low ridges and rounded hills, clothed with wild oats, and more or less openly wooded on their summits. Approaching its northern shores from *Sanoma* it assumes, though in a state of nature, a cultivated and beautiful appearance. Wild oats cover it in continuous fields, and herds of cattle and bands of horses are scattered over low hills and partly isolated ridges, where blue mists and open-

ings among the abruptly terminating hills, indicate the neighborhood of the bay.

The *Suisoon* is connected with an expansion of the river formed by the junction of the Sacramento and San Joaquin, which enter the Francisco bay in the same latitude, nearly, as the mouth of the Tagus at Lisbon. A delta of twenty-five miles in length, divided into islands by deep channels, connects the bay with the valley of the San Joaquin and Sacramento, into the mouths of which the tide flows, and which enter the bay together as one river.

Such is the bay, and the proximate country and shores of the bay of San Francisco. It is not a mere indentation of the coast, but a little sea to itself, connected with the ocean by a defensible gate, opening out between seventy and eighty miles to the right and left, upon a breadth of ten to fifteen, deep enough for the largest ships, with bold shores suitable for towns and settlements, and fertile adjacent country for cultivation. The head of the bay is about forty miles from the sea, and there commences its connexion with the noble valleys of the San Joaquin and Sacramento.

The climate of maritime California is greatly modified by the structure of the country, and under this aspect may be considered in three divisions—the *southern*, below Point Concepcion and the Santa Barbara mountain, about latitude 35°; the *northern*, from Cape Mendocino, latitude 41°, to the Oregon boundary; and the *middle*, including the bay and basin of San Francisco and the coast between Point Concepcion and Cape Mendocino. Of these three divisions the rainy season is longest and heaviest in the north and lightest in the south. Vegetation is governed accordingly—coming with the rains—decaying where they fail. Summer and winter, in our sense of the terms, are not applicable to this part of the country. It is not heat and cold, but wet and dry, which mark the seasons; and the winter months, instead of killing vegetation, revive it. The dry season makes a period of consecutive drought, the only winter in the vegetation of this country, which can hardly be said at any time to cease. In forests, where the soil is sheltered; in low lands of streams and hilly country, where the ground remains moist, grass continues constantly green, and flowers bloom in all the months of the year. In the southern half of the country the long summer drought has rendered irrigation necessary; and the experience of the missions, in their prosperous day, has shown that, in California, as elsewhere, the driest plains are made productive, and the heaviest crops produced by that mode of cultivation. With irrigation a succession of crops may be produced throughout the year. Salubrity and a regulated mildness characterize the climate; there being no prevailing diseases, and the extremes of heat during the summer being checked by sea-breezes during the day, and by light airs from the Sierra Nevada during the night. The nights are generally cool and refreshing, as is the shade during the hottest day.

California, below the Sierra Nevada, is about the extent of Italy, geographically considered in all the extent of Italy from the Alps to the termination of the peninsula. It is of the same length, about the

same breadth, consequently the same area, (about one hundred thousand square miles,) and presents much similarity of climate and productions. Like Italy, it lies north and south, and presents some differences of climate and productions, the effect of difference of latitude, proximity of high mountains, and configuration of the coast. Like Italy, it is a country of mountains and vallies: different from it in its internal structure, it is formed for *unity*; its large rivers being concentric, and its large valleys appurtenant to the great central bay of San Francisco, within the area of whose waters the dominating power must be found.

Geographically, the position of this California is one of the best in the world; lying on the coast of the Pacific, fronting Asia, on the line of an American road to Asia, and possessed of advantages to give full effect to its grand geographical position.

NEW-MEXICO.

In regard to this extensive region, we shall extract a few pages from the valuable Report made by Dr. Wislizenus, attached to the expedition of Col. Doniphan, and printed a few weeks since by order of the Senate of the United States.*

"New Mexico is a very mountainous country, with a large valley in the middle, running from north to south, and formed by the *Rio del Norte*. The valley is generally about twenty miles wide, and bordered on the east and west by mountain chains, continuations of the Rocky Mountains, which have received here different names, as Sierra Blanca, de los Organos, Oscura, on the eastern side, and Sierra de los Grullas, de Acha, de los Mimbres, towards the west. The height of these mountains south of Santa Fe may, upon an average, be between six and eight thousand feet, while near Santa Fe, and in the more northern regions, some snow-covered peaks are seen that may rise from 10,000 to 12,000 feet above the sea. The mountains are principally composed of igneous rocks, as granite, sienite, diorit, basalt, &c. On the higher mountains excellent pine timber grows; on the lower, cedars, and sometimes oak: in the valley of the Rio Grande, mezquite.

"The main artery of New-Mexico is the Rio del Norte, the longest and largest river in Mexico. Its head waters were explored in 1807 by Captain Pike, between the 37° and 38° north latitude; but its highest sources are supposed to be about two degrees farther north, in the Rocky Mountains, near the head waters of the Arkansas and the Rio Grande, (of the Colorado of the west.) Following a generally southern direction, it runs through New-Mexico, where its principal affluent is the Rio Chamas from the west, and winds its way then in a south-eastern direction through the states of Chihuahua, Coahuila and Tamaulipas, to the Gulf of Mexico, in twenty-five degrees fifty-six minutes north latitude. Its tributaries in the latter states are the Pecos, from the north; the Couchos, Salado, Alamo, and San Juan, from the south. The whole course of the river, in a straight line, would be near 1,200 miles; but by the meandering of its lower half, it runs at least about 2,000 miles, from the region of eternal snow to the almost tropical climate of the gulf. The elevation of the river above the sea near Albuquerque, in New-Mexico, is about 4,800 feet; in El Paso del Norte about 3,800; and at Reynosa, between three and four hundred miles from its mouth, about 170 feet. The fall of its water appeared to be, between Albuquerque and El Paso, from two to three feet in a mile, and below Reynosa one foot in two miles. The fall of the river is seldom used as a motive power, except for some flour mills, which are oftener worked by mules than by water. The principal advantage which is at present derived from the river is for agriculture, by their well-managed system of irriga-

* The reader will find a lengthy and complimentary review of this Report in the July No. of that most interesting western work, published in St. Louis, and entitled the *Western Journal*.

tion. As to its navigation in New-Mexico, I doubt very much if even canoes could be used, except perhaps during May or June, when the river is in its highest state, from the melting of the snow in the mountains. The river is entirely too shallow, and interrupted by too many sand-bars, to promise anything for navigation. On the southern portion of the river the recent exploration by Captain Sterling, of the United States steamer Major Brown, has proved that steamboats may ascend from the gulf as far as Laredo, a distance of 700 miles. Although said steamboat did not draw over two feet of water, yet the explorers of that region express their opinion, that 'by spending some \$100,000 in a proper improvement of the river above Mier, boats drawing four feet could readily ply between the mouth of the Rio Grande and Laredo.' Whenever a closer connexion between this head point of navigation and New-Mexico shall be considered, nothing would answer but a railroad, crossing from the valley of the Rio Grande to the high table land in the state of Chihuahua.

"The soil in the valley of the Rio del Norte, in New-Mexico, is generally sandy and looks poor, but by irrigation it produces abundant crops. Though agriculture is carried on in a very primitive way, with the hoe alone, or with a rough plough, made often entirely of wood, without any particle of iron, they raise large quantities of Indian corn and wheat, beans, onions, red peppers, and some fruits. The most fertile part of the valley begins below Santa Fe, along the river, and is called 'rio abajo,' or (the country) down the river. It is not uncommon there to raise two crops within one year. The general dryness of the climate, and the aridity of the soil in New Mexico, will always confine agriculture to the valleys of the water courses, which are as rare as over all Mexico—such, at least, as contain running water throughout the year. But this important defect may be remedied by Artesian wells. On several occasions I remarked on the high table-land from Santa Fe south, that in a certain depth layers of clay are found, that may form reservoirs of the sunken water-courses from the eastern and western mountain chain, which, by the improved method of boring, or Artesian wells, might easily be made to yield their water to the surface. If experiments to that effect should prove successful, the progress of agriculture in New-Mexico would be more rapid, and even many dreaded 'Jornadas' might be changed from waterless deserts into cultivated plains. But at present, irrigation from a water course is the only available means of carrying on agriculture. The irrigation is effected by damming the streams and throwing the water into larger and smaller ditches (*acequias*) surrounding and intersecting the whole cultivated land. The inhabitants of towns and villages, therefore, locate their lands together, and allot to each one a part of the water at certain periods. These common fields are generally without fences, which are less needed, as the grazing stock is guarded by herdsmen. The finest fields are generally seen on the *haciendas*, or large estates, belonging to the rich property-holders in New-Mexico. These haciendas are apparently a remnant of the old feudal system, where large tracts of land, with the appurtenances of Indian inhabitants as serfs, were granted by the Spanish crown to their vassals. The great number of human beings attached to these haciendas are, in fact, nothing more than serfs; they receive from their masters only food, lodging, and clothing, or perhaps a mere nominal pay, and are therefore kept in constant debt and dependence to their landlords; so that if old custom and natural indolence did not prevail upon them to stay with their hereditary masters, the enforcement of the Mexican laws against debtors would be sufficient to continue their servitude from generation to generation. This actual slavery exists throughout Mexico, in spite of its liberal constitution; and as long as this contradiction is not abolished, the declamations of the Mexican press against the slavery in the United States must appear as hypocritical cant.

"Besides agriculture, the inhabitants of New-Mexico pay a great deal of attention to the raising of stock, as horses, mules, cattle, sheep, and goats. Their stock is all rather of a small size, because they care very little for the improvement of the breed; but it increases very fast, and as no feeding in stables is needed in the winter, it gives them very little trouble. There are large tracts of land in New-Mexico, too distant from water to be cultivated, or in two mountainous parts, which afford, nevertheless, excellent pasturage for millions of stock during the whole year; but unfortunately here, as well as in the state of Chihuahua, the raising of stock has been crippled by the invasions of the hostile Indians, who considered themselves secret partners in the business, and annually take their share away.

"A third much neglected branch of industry in New-Mexico are the *minas*.—A great many now deserted mining places in New-Mexico prove that mining was pursued with greater zeal in the old Spanish times than at present which may be accounted for in various ways, as the present want of capital, want of knowledge in mining, but especially the unsettled state of the country and the advance of its arbitrary rulers. The mountainous parts of New-Mexico are very rich in gold, copper, iron, and some silver. Gold seems to be found to a large extent in all the mountains near Santa Fe, south of it in a distance of about 100 miles as far as Gran Quivira, and north for about 120 miles up to the river San Juan de Cristo. Throughout this whole region gold dust has been abundantly found by the poorer classes of Mexicans, who occupy themselves with the washing of this metal out of the mountain streams. At present the old and the new *Placers* near Santa Fe, have attracted most attention, and not only gold washes, but some gold mines too, are worked there. They are, so far as my knowledge extends, the only gold mines worked now in New-Mexico. But as I have made from Santa Fe an excursion there for the special purpose of examining those mines, I must refer the reader, in relation to them, to that chapter of my narrative. As to the annual amount of gold produced in New-Mexico, I am unable to give even an estimate. But as nearly all the gold of New-Mexico is bought up by the traders, and smuggled out of the country to the United States, I believe that a closer calculation of the gold produced in New-Mexico could be made in the different mints of the United States than in Mexico itself." Several rich silver mines were, in Spanish times, worked at Ayo, at Cerrillos, and in the Nambe mountains, but none at present. Copper is found in abundance throughout the country, but principally at las Tijeras, Jenms, Abiquin, Guadalupe de Mora, etc. I heard of but one copper mine worked at present south of the *Placers*. Iron, though also abundantly found, is entirely overlooked. Coal has been discovered in different localities, as in the Raton mountains, near the village of Jemez, south-west of Santa Fe, in a place south of the *Placers*, etc. Gypsum, common and selenite, are found in large quantities in Mexico; most extensive layers of it, I understood, exist in the mountains near Algodones, on the Rio del Norte, and in the neighborhood of the celebrated '*Salinas*.' It is used as common lime for white-washing, and the crystalline or selenite instead of window glass. About four days travelling, (probably one hundred miles,) south-southeast of Santa Fe, on the high table land between the Rio del Norte and Pecos, are some extensive *salt lakes*, or '*salinas*,' from which all the salt, (muriate of soda,) used in New-Mexico is produced. Large caravans go there every year from Santa Fe in the dry season and return with as much as they can transport. They exchange, generally, one bushel of salt for one of Indian corn, or sell it for one, and even two dollars a bushel.

"Not far from these *salinas* the ruins of an old city are found, of the fabulous '*la Gran Quivira*.' The common report in relation to this place is, that a very large and wealthy city was once here situated, with very rich mines, the produce of which was once or twice a year sent to Spain. At one season, when they were making extraordinary preparations for transporting the precious metals, the Indians attacked them; whereupon the miners buried their treasures, worth fifty millions, and left the city together; but they were all killed except two, who went to Mexico, giving the particulars of the affair, and soliciting aid to return. But the distance being so great and the Indians so numerous, nobody would advance, and the thing was dropped. One of the two went to New-Orleans, then under the dominion of Spain, raised five hundred men and started by way of the *Salinas* but was never heard of afterwards. So far the report. Within the last few years several Americans and Frenchmen have visited the place; and, although they have not found the treasure, they certify at least to the existence of an excavation about ten miles in length, to the still standing walls of several churches, the emblems of the Spanish coat of arms, and to many spacious pits, supposed to be the *treasures*. It was no doubt a Spanish mining town, and it is not unlikely that it was destroyed in 1680, in the general, successful insurrection of the Indians against the Spaniards. Dr. Samuel G. Morton, in a late pamphlet, expresses the probability that it was originally an old Indian city, into which

"The annual production of gold in the two *Placers* seems to have been, in some years it was estimated from \$30,000 to \$40,000 per annum; in others, from \$40,000 to \$50,000, and in better years even as high as \$60,000 per annum."

the Spaniards, as in several other instances, had intruded themselves, and subsequently abandoned it. Further investigation, it is to be hoped, will clear up this point.

"The *climate* of New-Mexico is, of course, very different in the higher, mountainous parts, from the lower valley of the Rio del Norte; but generally taken, it is temperate, constant, and healthy. The summer heat in the valley of the river will sometimes rise to nearly 100° Fahrenheit, but the nights are always cool and pleasant. The winters are much longer and more severe than in Chihuahua, the higher mountains are always covered with snow, and ice and snow are common in Santa Fe; but the Rio del Norte is never frozen with ice thick enough to admit the passage of horses and carriages, as was formerly believed. The sky is generally clear, and the atmosphere dry. Between July and October, rains fall; but the rainy seasons are here not so constant and regular as in the southern states. Disease seems to be very little known, except some inflammations and typhoid fevers in the winter season."

"The whole *population* of New-Mexico was, in 1793, according to a census, 30,953; in 1833 it was calculated to amount to 52,360, and that number to consist of 120 Gupuchins, (native Spaniards,) 420 Creoles, 520 Mestizes of all grades, and 1020 of Pueblo Indians. In 1842, the population was estimated at 57,026, and at present at about 70,000 souls."

"The *rulers* of New-Mexico, under the Mexican government, used to be a governor and legislative power, (junta departmental) but as the latter was more a nominal than a real power, the governor was generally unrestrained, and subject only to the law of revolution, which the New-Mexicans used to administer very freely, by upsetting the gubernatorial chair as often as the whole Republic did that of the President. Governor Armijo, the last ruler of New-Mexico, before it was invaded by the Americans, has already received his full share of comment from the public press. He is one of those smart, self-confident men, who, like their prototype Santa Anna, are aware that the wheel of fortune is always turning, and that the Mexicans are a most credulous and easily deceived people; and though at present he is a fugitive from his country, and subdued, I have no doubt he will, before long, appear once more on the stage, and by some means come into power again. The judiciary power in New-Mexico has always been as dependent as the governor was independent. Besides that, the clergy, as well as the military class, had their own courts of justice. In relation to the general government of Mexico, New-Mexico has always maintained greater independence than most of the other states—partly from its distance from Mexico, and partly from the spirit of opposition in the inhabitants, who derived very little benefit from their connexion with the Republic, and would, therefore, not be taxed without an equivalent. Several times the general government tried to introduce in New Mexico the so-called *estancillas*, or the sale of tobacco in all its forms, as a monopoly of the general government; but it never succeeded. In the same way the introduction of copper coin was resisted. The loose connexion with the mother-country will aid a great deal its annexation to the United States, provided, that the latter will bestow upon it what the Mexican government never could—stability of government, safety of property and personal rights, and especially protection from the hostile Indians.

"*Santa Fe* is one of the oldest Spanish settlements in New-Mexico; its origin dates, probably as far back as the end of the sixteenth century. It lies in 35 deg., 41 min., 6 sec., north latitude, and 10; deg., 2 min., 30 sec., longitude west of Greenwich*. Its elevation above the sea, according to my own observations, is 7,047 feet.

"*Santa Fe* lies in a direct line about twenty miles east of the Rio del Norte, in a wide plain, surrounded on all sides by mountains. The eastern mountains are the nearest; those towards the northeast, the Taos mountains, the highest; some of their snow-capped peaks are supposed to be from four to five thousand feet

* This is the result of the most numerous astronomical observations made by Lt. Emory, of the engineer corps, during his stay in Santa Fe, and which he has kindly allowed me to refer to. The result of my own observations for latitude, made during my short sojourn in Santa Fe, differs from his but in seconds. Dr. J. Gregg had already determined it as in 35 deg. 41 min. There can, therefore, be no doubt as to the real latitude of Santa Fe. Nevertheless, all the Mexican maps have generally laid it nearly one degree farther north. This northern tendency of Mexican maps I observed on many other points where I made observations for latitude.

higher than Santa Fe. A small creek, that comes from the eastern mountains, provides the town with water, and runs about twenty-five miles south-west from it into the Rio del Norte. There is no timber on the plains, but the mountains are covered with pine and cedar. The soil around Santa Fe is poor and sandy; without irrigation, scarcely anything can be raised. There is no good pasturage on the plains; stock is generally sent to the mountains, and only asses, mules, and goats—the stock of poorer classes—are kept near the settlements.

"The climate of Santa Fe is rather pleasant; not excessively warm in the summer, and moderately cold in the winter, though snow is a common occurrence. Nearly all the year the sky is clear, and the atmosphere dry. All the houses in Santa Fe are built of adobes, but one story high, with flat roofs; each house in a square form, with a court or open area in the centre. The streets are irregular, narrow, and dusty. The best looking place is the 'plaza,' a spacious square, one side of which the so-called palacio, the residence of the governor, occupies. The palace is a better building than the rest; it has a sort of portico, and exhibits two great curiosities, to wit, windows of glass, and festoons of Indian ears. Glass is a great luxury in Santa Fe; common houses have shutters instead of windows, or quite small windows of selenite, (crystallized gypsum.) The festoons of Indian ears were made up of several strings of dried ears of Indians, killed by the hired parties that are occasionally sent out against hostile Indians, and who are paid a certain sum for each head. In Chihuahua, they make a great exhibition with the whole scalps of Indians which they happen to kill by proxy; the refined New-Mexicans show but the ears. Among the distinguished buildings in Santa Fe, I have to mention yet two churches with steeples, but of very common construction.

"The inhabitants of Santa Fe are a mixed race of Spanish and Indian blood, though the latter prevails. The number of inhabitants was, in former times, reported as high as 4,000; at present it contains at most 3,000; and with the surrounding settlements belonging to the jurisdiction of Santa Fe, about 6,000. The manners and customs of the inhabitants of Santa Fe are those of the whole of Northern Mexico; they are indolent, frugal, sociable, very fond of gambling and fandango, and the lower classes, at least, exceedingly filthy. As in most Mexican towns, I was at a loss to find out by what branch of industry the mass of the people support themselves; and I came at last to the conclusion, that if from natural indolence they work as little as possible, their extreme frugality, too, enables them to subsist upon almost nothing."

SOUTHERN CITIES.

1.—HEALTH OF CHARLESTON—COMPARATIVE HEALTH OF NORTHERN AND SOUTHERN CITIES—NEW-ORLEANS, MOBILE, ETC.—VITAL STATISTICS AND GENERAL HEALTH RECORD, Etc.

THE Charleston Mercury has published some very interesting statistics, which go to prove what we have all along asserted in regard to the health of Southern cities, so little understood at the north. We have often been amused with the ignorance displayed in that quarter. Their insurance companies exact a higher premium if the party, being a southerner, remain at home during summer; but this will yet permit him to spend his winter in New-England, where, perhaps, his chances of life would be diminished one half! For New-Orleans many of the companies refuse to insure altogether! Sapient statisticians these.

MORTALITY CHARLESTON, 1847.

Male, white.....	114				
Female.....	104	—	218		
Male, black, &c.....	158				
Female, ".....	172	—	330	—	548
Natives.....	477				
From other states.....	20				
Foreigners.....	51				
					548

Proportion deaths to population, excluding foreigners, 1 to 62.29
 " " " including " 1 to 54.74

The Mercury then makes this comparative statement:

<i>Charleston.</i>	<i>Baltimore.</i>	<i>New-York.</i>	<i>Boston.</i>
Population.....30,000.....	135,000.	400 000	135,000.
Deaths.....548, or.....	3,795, or.....	15,788, or.....	4,123 or.....
1 in 54.74.	1 in 35.82.	1 in 25.35.	1 in 32.71.
Under 1 y. 89 or 1-6th.....	866 or 1-4th.....	188 or 1-4th.....	686 or 1-6th.....
5 93 1-6.....	796 1-5.....	3257 1-5.....	860 1-5.....
10 10 1-54.....	173 1-32.....	611 1-25.....	180 1-23.....
20 23 1-24.....	151 1-256.....	46 1-24.....	231 1-18.....
30 67 1-8.....	320 1-11.....	1947 1-8.....	563 1-7.....
40 59 1-9.....	343 1-11.....	1853 1-8.....	432 1-9.....
50 43 1-13.....	259 1-15.....	1279 1-12.....	328 1-13.....
60 40 1-11.....	176 1-23.....	746 1-20.....	211 1-20.....
70 44 1-12.....	124 1-31.....	580 1-20.....	167 1-25.....
80 29 1-19.....	133 1-39.....	389 1-39.....	113 1-35.....
90 33 1-17.....	57 1-67.....	153 1-103.....	44 1-94.....
100 7 1-78.....	12 1-316.....	35 1-450.....	11 1-375.....
110 2 1-270.....	4 1-949.....	31 1-5262.....	unknown, 7.....
548	3,795	15,788	4,123

By the paper published in our present number it will be seen that Savannah averaged in the last eight years, 1 in 33; but this includes only the white population. Dr. Emerson fixes the average of the last ten years, for white and black, as 1 in 37.03. (See *Silliman's Journal*.) in Philadelphia.

The Mercury does not include New-Orleans in its calculation—we know not why. Taking the year 1845, when no yellow fever prevailed, or very little, the total of deaths was 2,783, as given by the Medical Journal, which, estimating the average population at this very low mark, 130,000, was only 1 in 47. We have not the statistics before us, but do not question it can be shown, that excluding all cases of deaths from diseases originating abroad—consumptions, army diseases, &c., the proportion for whites and blacks, for the last ten years, will not materially vary from the point assumed for 1845. It is to be hoped our Board of Health will collect and present the statistics.

Since 1837 we have had but four epidemics, the other summers being in general healthy. The years 1822, '26, '31, '32, '36, '38, '40, '44, '45, '46, were almost entirely exempt from fever.

But to return to the Mercury's statistics.

"From data in our possession we learn that the deaths in St. Louis, during the last year, were 2,825; and, placing the population at the very liberal estimate of 56,000, it would amount to 1 in 20. In Natchez, (Miss.) the deaths were 1 to 45. In Providence, R. I., 1 to 38. Cambridge, Mass., 1 to 47. Newark, 1 to 54.

"In Europe, we find the proportion in London, 1 to 40; Glasgow, 1 to 44; Manchester, 1 to 44; Geneva, (Switzerland) 1 to 43; St. Petersburg, (Russia) 1 to 37; Berlin, (Prussia) 1 to 34; Brussels, 1 to 26; Paris, 1 to 32; Lyons, 1 to 32; Madrid, 1 to 29; Nice, 1 to 30; Leghorn, 1 to 35; Naples, 1 to 28; Palermo, (Sicily) 1 to 31; Rouen, 1 to 25."

Dr. Nott, of Mobile, in our Review, stated that, from 1829 to 1837, 8 years, there was no fever; but that since that time there have been four epidemics, attributed by him to the great neglect in the last period of police regulations, &c.

We cannot conclude this paper without adverting to the negligent manner in which vital statistics are preserved in our country, and most especially at the south. Nothing can be more reprehensible than this. The National Medical Convention at Philadelphia, last year, called the attention of the whole country to the subject; and the Medical Convention of South Carolina have since taken it up in earnest, as we learn from the report of Dr. Simons to that body. The most stringent laws are proposed to be enacted, and we trust that the example will be followed in every other state. We extract from the Philadelphia Report:

"First. Upon the circumstances connected with the three important eras of existence, birth, marriage, and death, are dependent, to a very great extent, the physical, moral and civil condition of the human family.

"Second. A knowledge of these circumstances is necessary for a full comprehension of important means for the certain advancement of the population of states, in prosperity and civilization.

"Among the first communities to establish a system of registration of births, marriages and deaths, was Geneva, where it was begun as early as 1364, and has since been continued with great care. The registers are there viewed as pre-estimated evidences of civil rights, and it appears

In the year ending 1st April, 1848, Savannah exported to foreign ports 60,087 bushels corn; 412 bbls. turpentine; 30,000 yards osanburgs; and imported 224,645 bushels salt; 374,992 gals. molasses; and \$62,569 in iron, pig and bar. The number of vessels arriving in the same time, were, from foreign ports, 41; and 6,925 tonnage; coastwise, 397; 99,409 tonnage. Foreign vessels from foreign ports, 51, of 23,766 tonnage; four ships with tonnage ranging from 572 to 721, are owned in Savannah, either in whole or in part; one barque, six brigs, eighteen schooners, 9 sloops, 19 steamboats.

RECEIPTS COTTON, TEN YEARS.*

To September 1, 1838.....	206,048 bales
" 1, 1839.....	196,618 "
" 1, 1840.....	295,156 "
" 1, 1841.....	146,271 "
" 1, 1842.....	228,396 "
" 1, 1843.....	299,173 "
" 1, 1844.....	243,420 "
" 1, 1845.....	315,742 "
" 1, 1846.....	189,076 "
" 1, 1847.....	246,029 "
1848, seven months.....	156,404 "

VALUE REAL ESTATE.

1843.....value, \$2,853,900	1846.....value, \$3,306,734
1844....." 3,245,627	1847....." 3,482,073
1845....." 3,279,988	1848....." 3,600,000

In the ten years ending 1820, the average of deaths was 1 to 14; of average white population, in the ten years ending 1830, 1 in 17; ending 1840, 1 in 24; ending 1848, 1 in 33; a most marked improvement. The records of the black population are, unfortunately, not given in the pamphlet, though they are preserved in the registers. This is an unfortunate omission, and we beg Mr. Bancroft to send them to us.

"The growing population—the great increase of the mechanical arts—the extended use of steam as applied to mills, presses, and other useful employment—are all evidences of a healthy state of the body politic. And this increase of steam power has been so successful, that it has attracted the notice of but few of our citizens, and most of them will be surprised to learn that of the *eighteen* establishments propelled by steam, *fourteen* of them have been erected within the last ten years."

3.—MOBILE AND THE PROGRESS OF ALABAMA.

We have been suspected of some little "hostility" towards our sister city, Mobile, the Lord only knows why, as we think we have shown.

The "*Planter*" has an interesting paper on the agricultural advance of Alabama. He says, that some thirty years after the settlement, scarcely any attention was paid to the culture of other than cotton, and corn for home consumption. The latter, however, not unfrequently neglected also. Everything was merged in cotton; the log-cabin was sufficient shelter; education was disregarded; nobody had time to beautify estates with gardens or fruit-trees. It is now the reverse. In Catawba, Corsa, Talladega, Jones' Vallies, etc., the cotton product decreases, while wheat, rye, oats, corn, and stock increase. Wheat and flour are now shipped to Mobile from some of the counties.

In the strictly cotton counties the "*Planter*" traces a great improvement: With scarcely an exception, every educated planter in the counties we have named above, resides in comfortable and commodious dwellings; indeed, many of them might lay claim to a considerable degree of elegance and taste. Not only this—the grounds are laid off with taste, in which some of the more noble forest-trees have been left, interspersed with those of other regions; orchards planted out, embracing the apple, pear, peach, plum, cherry, fig, grape, &c., in fact, every comfort and appliance that denote permanency, have taken the place of the temporary improvements and careless tillage of former days. More care is bestowed upon the cotton culture, picking, ginning and packing; extensive corn-fields are planted and carefully cultivated; wheat, oats, rye, peas, &c., are raised in sufficient abundance for plantation use; horses, mules, cattle, and hogs are better cared for; fences are kept in good repair, and ditching and ploughing are conducted in such a manner as to preserve lands from wash, and increase their fertility. And what is of equal or greater consequence, an unusual degree of interest

* Since 1844 the size of the bales have increased, on an average, 75 lbs., or 20 per cent.

is manifested by all classes for the cause of general education. There are in South Alabama at least a dozen well established and well conducted male and female academies, besides primary schools scattered everywhere. Besides these, there is our state university, which has taken a high rank as a literary institution; and St. Joseph College, in our immediate vicinity, destined to be one of the leading colleges of the South."

A writer in the same paper adverts to the stationary value of real estate in Mobile for the last ten years, whilst in Boston and Charleston it has been advancing, and he attributes it to the railroad movements in progress in those cities. He then points to the great projected railroad from Mobile to the Valley of the Ohio, and predicts for it the most invigorative influences.

Another writer, over the signature of Sumpter, after exhibiting the coal and iron resources of Mississippi, which, in some of the counties, he thinks quite considerable, remarks: "So that, if in any way, proper and judicious attention be bestowed on these recently discovered mineral resources, new cause for confidence in the Mobile and Ohio railroad project may be found in facts and circumstances not known when the enterprise was first started, and additional energy infused into those who take an interest in its successful completion, and additional arguments brought forward in its favor; while a new source of wealth, and a new field for enterprise and capital is opened to the people of Mississippi. She has the elements of manufactures in many materials and facilities; but until lately, mineral resources were entirely wanting, or very small, except, perhaps, in the extreme north-east corner; but it is now ascertained that to her facilities for producing cotton and wool, and manufacturing them, producing hides, making leather, and working it, her timber, and her facilities for making paper and other manufactures, she has also the great articles of iron and coal to quite a large extent, if not in great profusion, and is from this cause doubly prepared to reap advantage from these improvements that are made to facilitate trade and commerce."

In regard to the Mobile and Ohio Railroad, after the lengthened paper published by us a year ago, we will only add, that according to all accounts the people of Mobile are in earnest upon the subject, and determined to press it to completion: the directory has busied itself in arranging all the preliminaries for active operations at an early day. Committees have been appointed to increase the subscriptions at home, and open books in the other states interested in the enterprise—to secure competent engineers, &c. Messrs. George S. Gaines and John S. McKee have just entered upon the duties assigned them by the directory, of arranging for the right of way, procuring donations of land, &c. We learn, also, that there is every prospect that a chief engineer of reputation will be employed within a few days, when the preliminary surveys, &c., will be commenced, and prosecuted with as much vigor as is possible.

4.—HOUSTON, TEXAS.

Not having visited the city of Houston for two years, I was particularly struck with its improved appearance when there. Quite a number of fine looking brick buildings have been erected, and several others are in the course of completion. The worn and decayed frame buildings on the principal streets are giving place to more substantial substitutes, and it is gratifying to observe that the industry and enterprise of the people in the improvement of their city suffer little or no abatement from the dulness of the season. The stores in Houston are well filled with merchandise, and although business is necessarily somewhat depressed at the present time, yet all the merchants appear to look forward with confidence to a brisk and prosperous trade.—*Galveston News*.

5.—ST. LOUIS.

We have received the report for 1848, of the Mayor, Hon. John M. Krum, with accompanying documents. To show the extraordinary progress of the city, we will extract the following:

TABULAR STATEMENT.

Years.	Census.	Assessed value of prop'ty.	Rate per centum.	Taxes assessed.	Taxes collected.	Total Revenue.
1818.....		1,218,390 62	40-100....	\$4,873 56	\$ 700 00	\$1,307 11
1819.....		1,132,163 33	30-100....	3,396 49	4,454 77	5,244 77
1820.....		1,024,440 00	35-100....	3,585 54	3,486 77	4,164 56
1821.....		955,950 00	40-100....	3,823 80	2,211 62	3,300 00
1822.....		956,170 00	40-100....	3,624 68	2,228 44	3,435 08
1823.....		810,064 00	50-100....	4,050 32	.....	.....
1824.....		1,028,217 00	50-100....	5,137 54	7,782 62	17,161 08
1825.....		788,168 00	25-100....	1,970 42	486 09	347 44
1826.....		1,013,876 00	25-100....	2,509 69	1,261 07	4,741 50
1827.....		1,175,380 00	25-100....	2,938 45	2,108 40	11,387 28
1828.....		1,510,332 00	25-100....	3,775 83	1,730 91	17,436 80
1829.....		1,906,392 00	25-000....	4,765 95	3,410 62	20,960 17
1830.....	5,852	1,830,616 00	25-100....	4,576 54	1,674 67	14,291 69
1831.....		2,080,082 00	101-100....	3,466 77	2,620 20	18,654 28
1832.....		2,338,54 00	161-100....	3,897 64	2,274 55	.....
1833.....	6,397	2,196,672 00	124-100....	2,745 84	.....	.....
1834.....		2,063,688 00	124-100....	2,759 61	818 06	24,546 64
1835.....	8,216	2,221,888 00	371-100....	8,337 08	3,837 16	31,585 65
1836.....					11,614 63	44,481 14
1837.....	14,253	7,425,618 00	334-100....	24,752 06	22,924 63	88,906 04
1838.....		8,169,657 80	40-100....	33,402 75	28,257 79	90,167 16
1839.....		7,731,360 00	50-100....	39,000 55	46,738 54	140,178 97
1840.....		8,573,682 00	50-100....	43,291 56	40,195 96	.....
1841.....		8,937,198 00	50-100....	45,988 61	39,406 57	198,366 07
1842.....					42,113 55	136,145 04
1843.....		8,308,489 41	674-100....	74,795 23	92,663 51	193,771 78
1844.....		13,999,923 30	674-100....	122,411 62	116,774 19	214,849 62
1845.....	36,721	43,519,591 53	1 pr. ct.	145,185 91	145,672 26	243,117 13
1846.....		15,292,120 37	1 pr. ct.	152,021 20	143,513 31	258,536 04
1847.....	47,974	16,665,146 75	11-20	174,963 93	170,629 63	292,359 08

6.—NEW-ORLEANS IN MIDSUMMER.

August is fast hurrying away, and the sultry sun pours down his unmitigated fires upon those of us who cannot off to the sea-side, the lakes or springs, or the cool shades of the country, but must endure the hot walls still. Well, we are not, at least, without philosophy! To be sure, we are spared many of the annoyances to which our travelling friends are subject, and we can perambulate without being jostled by rude crowds, or run over by carts and omnibuses. Everything is quiet and dignified; one may almost recognize every face he meets in the streets. Some little time can be afforded for social indulgence.

Rain, rain, rain!—there is no cessation to the flood! The very sluices of heaven are let loose—for weeks and months the sun has only been allowed occasional peeps to see, as it were, how we are getting on below. But he makes the most of these *interregnums*. Will there be no end of these torrents! Our country friends groan, as well they may, for their cane-fields. But the nights are beautiful still—all moonlight or starry.

We are free from epidemic. The dreadful passages of disease and death have not yet been enacted. The hospitals, and a few struggling cases in private practice, embrace all we have of fever. Shall this season escape! Alas! we fear not, from the pregnant signs exhibited.

How calm and stately has everything grown. The little knots of politicians at the street corners, or near the post-office, discourse of Taylor, Cass, and Barnburners, and yawn even in their best passages. The soldiers have all left, scarce a straggling volunteer remains to us, who have for so many months been surrounded with all the "pomp and circumstance of glorious war," and entertained at our boards its heroes. The last of them all, the man of Contreras, is by his family hearth! Even the "raw head and bloody bones" of the *Sierra Madre* invasion excites not a passing sensation.

A visit to the courts is but to dreary, dismal solitudes. Judge and jury, now, have only to look after an obdurate criminal. Our city fathers seize the occasion to pave streets and lay gas-pipes, and the trowel and the hod are in full play.

If we walk the Levee the great *Eaton House* shows itself in piles of brick and mortar, and will in time rise majestic by the old father of waters. The house

granite blocks of the *Municipality Hall* are ascending the crane, and they have erected a great galliotin-looking affair, which towers upon all around. The *University* is finishing and adorning its buildings. They are building a Catholic church and Jesuit school. Huge stores and handsome dwellings are going up all around and extending far into the suburbs. They are mounting the telegraph wires and repairing the levee. Some relief may be found in all these evidences of progress. Greater times still are in reserve for New-Orleans. Our leading clergy are away, and some of our best doctors and lawyers. Amusements there are none. Theatres closed, Opera closed. They are enlarging the St. Charles. Some negro melodists have succeeded the "model artists." Occasionally a balloon ascends on Sunday afternoon. One may at least enjoy the shell road.

The newspapers flourish, and here we are consoled that they are unsurpassed. The war being over, they look to other sources. The *Picayune's* foreign news and Paris correspondent—the spicy "neutrality," playful humor, and *progressive policy* of the *Delta* and *Crescent*; the *politico-economical* speculations of the *Bulletin*; the able commercial summaries of the *Times*; the admirable and unsurpassed statistics of the *Prices Current*. Then come the guns of politics—the *Courier*, *Bee*, and *National*, always full of controversy, handled with spirit and ability. We forget not the interesting *Mercury*. Nowhere can there be found a more respectable press. Our French, German and Spanish friends all have their daily sheets. We have one *monthly commercial periodical*; and a *tri-monthly Medical Review*, most highly prized by the doctors at home and abroad. Rumor predicts a revival in the fall, of the *Law Journal* and *Literary Miscellany*, which have been allowed to fall to the ground. In the country we would name those admirable agricultural sheets, the *Concordia Intelligencer* and the *Planter's Banner*. Nor forget we our religious press, Protestant and Catholic. In the winter there are to be lectures in the different departments of the *University*, and it is hoped that institutions will be effectually organized. An extra session of the Legislature is called in regard to school matters.

The *Historical Society* is moving slowly. It is collecting a Library. John Perkins, Esq., one of the secretaries, is now in Europe, with power to prosecute researches in regard to Louisiana. The search in Spain has so far turned up nothing.*

* Some time ago we clipped from the *Delta's* correspondent, we think, an extract, interesting in regard to New-Orleans literature, taken from the work of Henry Caldwell:

"The first original piece enacted in New-Orleans was called 'La Pere Indiana,' (The Indian Father,)—it was performed by a company of amateurs, at the Governor's mansion, in 1758. The second original dramatic production, and first played by a regular company at the French Theatre, was entitled, 'Les Natchez, or the Last of the Serpent Tribe.' This piece, we understand, was published. The third was written by James H. Kennicott, Esq., entitled, 'Irma, or the Prediction,' which, in competition with five others, gained the premium of \$300, offered by Mr. Caldwell;—it was produced in 1830. The fourth was written by Mr. James Rees, called, 'Washington at Valley Forge,' produced at the American Theatre on the 4th of March, 1833. The next original production was 'The Headman,' by the same author—played 1834. Then followed 'The Mistletoe Bough.' Mr. Bannister, in 1835, produced his 'Rathanemus;' and in the same year, F. Haynes, Esq. brought out 'La Tour de Nesle,' in which Mrs. Frichard created a sensation as Margaret. 'Lucretia Borgia,' arranged and adapted to the stage by Mr. J. Rees, was played in 1836, Miss Cushman as Lucretia. On the 22d of February, 1835, your talented townsman, Mr. George W. Harby, produced his celebrated Indian play, in 5 acts, called 'Tutoona.' Mr. Harby, it appears from this work, is the author of the following productions, viz.: 'Minka,' 'The Robber Calf,' 'A 2d,' 'The Gentleman in Black,' 'Stephanie,' a prize tragedy, (now in the hands of the author of this work,) 'Nick of the Woods,' 'The Deceiver,' &c. It also appears that several other original pieces were produced by the several authors named, and were well paid by the managers. Mr. Rees, it seems, got \$300 for dramatizing 'La Fuite' for Messrs. Rowe & Russell."

In 1836, Mr. T. W. Collins, a young and talented lawyer of New-Orleans, produced a 5 act tragedy, entitled, 'The Martyr Patriots, or Louisiana in 1769.' This tragedy was printed by L. Dillard & Co., in 1836. The author of the book presented me with a copy of this play, and I have read it with much interest.

The work is interesting in such details, and contains, also, many anecdotes of actors. It gives a general history of Mr. Caldwell in his connection with the southern stage, he being in fact the founder of the drama in the South, as also his history in connection with the improvements of New-Orleans, &c. The author introduces a very interesting Biographical Sketch of Miss Jane Placide, who died in New-Orleans May 16, 1845, and was buried in the American burying-ground, to whose memory a neat tomb is erected with this inscription:

"——— There is not an hour
Of day, or dreamy night, but I am with thee;
There is not a wind but whispers o'er thy name,
And not a flower that sleeps beneath the moon,
But in its hues or fragrance tells a tale
Of thee."

But we are tired of prosing, and as the rain seems resting a moment, though the clouds are still lowering, we are off for dinner, and will see the office again some time to-morrow if nothing happens in the interim.

MISCELLANIES.

1.—THE PATENT OFFICE OF OUR HOME STATISTICS.

It is a subject of gratulation that this important department of our government has been placed in the hands of a man of such wide and liberal views and indefatigable energies as Edmund Burke, and we trust he will be allowed for a long time to come to carry out the admirable system he has introduced. No mere questions of politics should ever be allowed to interfere.

Mr. Burke's last Report is a well digested and elaborate document, and presents the most interesting material for reflection and study to all interested in the industrial advances of our country: It is by far the most valuable contribution yet made by the Patent office, and will be followed by others still more perfect and admirable, if no undue parsimony be indulged by government. The volume before us embraces nearly seven hundred papers. Eighty-four of these are devoted to the patent business proper, or the extension of American ingenuity. Did space permit, we should gladly review this. The rest of the work is devoted to the statistics of agriculture and the home trade. In this department the tabular estimates of crops, and the remarks upon each, and more especially the elaborate notice of the minor products, generally overlooked, but yet important, viz., eggs, poultry, milk, butter, etc., etc., etc., are deserving of general study.

In the appendix No. 1, we have an extended treatise upon *sheep and wool*, prepared by Mr. Fleishman, formerly connected with the Patent office, and published at its request. The paper contains an account of the wool trade of Germany, as well as everything relating to the management of sheep in Europe; some remarks upon German Agricultural Schools, Conventions, etc. A number of handsome lithographs illustrate the Report. Mr. Fleishman brought from Europe specimens of the most approved wools, which Mr. Burke distributed to each of the states. Those for Louisiana have been inspected by us and deposited in the bureau of statistics.

Appendix No. 2 embraces *reports in relation to the crops* of the different states, contained in letters replying to the circular of the Patent office. No. 3 contains letters relating to the *cost of raising wheat and Indian corn* in every section of the Union. No. 4 is on *Mexican maize*; 5 culture of potatoes. No. 9 is a paper on *Cuba tobacco*, which was first translated and published in this state. Some twenty pages follow upon *silk and wadder*. Appendix 14 is a treatise on *cattle raising*, from the German.

Appendix 19 exhibits great labor and ingenuity, and deserves the highest praise. It is entitled—"Production of cereal grain in the United States in 1847—Consumption, and surplus for exportation—demands of foreign countries—foreign countries rivals of the United States—products of the labor and capital of the United States in 1847—aggregate amount of property, real and personal, in the United States, &c." Many elaborate extracts from this we have published in the late numbers of our Review.

Appendix 20, which concludes the work, is on the HOME TRADE, and excites especial interest with us. It is known that the tables and reports of the general government have only extended to the foreign movements of our commerce. The national census, if it were otherwise sufficient, is only made once in ten years. The facts that are required here can only be known adequately through the states themselves, even should the general government establish what Mr. Calhoun hinted at in the last Congress, a HOME DEPARTMENT, which, we think, would be a blessing.

Will the states move in the matter? Mr. Burke urges it strenuously. He

says, in referring to the initiatory movement made the present year in Louisiana, "It is ardently hoped that the measure may be carried out, and that the example which will thus be set by Louisiana, resulting from an enlightened view of the importance of her great interests, agricultural and commercial, will be speedily followed by the other states of the Union." In our July number will be found other information upon this point.

Mr. Burke has issued into every quarter of the Union a circular, soliciting information upon every point connected with our agriculture. To the special one sent to our address, we promise an answer, and hope our Louisiana friends will assist us with the necessary information. The circular solicits light particularly in regard to—

Names and date of formation of the county or township Agricultural Society, Farmers' Club, if any, Presidents and Secretary, with P. O. address.

Number of members, amount paid for premium, funds, &c.

Names, date of formation, number of members, funds, amount of premiums, &c., of other Industrial Associations.

State of the weather at the planting season, while growing, and at harvest; and when practicable, the mean temperature for the months, and amount of rain which fell.

Prevalence of blight or insect's, probable per centage of loss by them, &c.

Cost per bushel of raising Wheat, Indian Corn, &c.

Probable average consumption per individual of Wheat, &c., Indian Corn, Potatoes, Beef, &c.

2.—THE SMITHSONIAN INSTITUTE.

We suppose everything in relation to the history, etc. of this Institute is now familiar to the American people. Its practical operation is only now being felt, and the Regents appear to be in earnest.

We have received two astronomical contributions which they have published, and arrangements have been made to bring out in the same manner a splendid work on the "ancient monuments of the Mississippi valley," by Messrs. Squier and Davis. A report of the whole proceedings of the Institute has been published in a volume of 200 pages, which we have read with lively interest.

By the programme we learn that the object is to "Increase and Diffuse Knowledge among Men."

1. *To increase knowledge* by stimulating researches, offering medals, publishing approved papers, and appropriating a portion of the income annually to special objects of research, under the direction of suitable persons. Among the subjects for which appropriations are to be made are named, meteorology, storms, natural history, geology, topography, etc., experimental philosophy, historical researches in America, etc., ethnological researches; statistical inquiries, with reference to physical, moral and political subjects.

2. *To diffuse knowledge.* By publishing a series of Reports, giving an account of the new discoveries in science, and of the changes made from year to year in all branches of knowledge not professional. By publishing separate treatises on subjects of general interest, etc., etc.

The publications to be distributed by Congress partially sold for a small price. In regard to the purchase of a library, the Regents remark:—"Catalogues of the different libraries in the United States should be procured, in order that the valuable books first purchased may be such as are not found in the United States."

3.—THE INSANE OF THE UNITED STATES.

Though it be very difficult to determine where sanity ends and madness begins, and if the rigid rules of mental or physiological science were applied, some of us who are walking at large would perhaps be put away for safer keeping, considering the high capers we cut at times, etc., etc. Still the cause of humanity must be attracted towards that very large class who are perhaps permanently and incurably denied the light of reason. To ameliorate their condition is worthy of the highest efforts of philanthropy.

A memorial has lately been presented to the Congress of the United States by D. L. Dix, and printed, calling for the donation of an immense body of public land for the support and protection of this unfortunate class, who are, as it were

the "wards of the nation." Without endorsing the application, we can remark that the memorial abounds in information, collected in all the states, of the most interesting, but touching and melancholy character.

NUMBER OF INSANE AND IDIOTS, FROM THE UNCORRECTED CENSUS OF 1840.

States and Territories.	White persons.		Colored.		Total.	Population.	Proportion of insane and idiots to the whole.
	Public charge.	Private charge.	Private charge.	Public charge.			
Maine.....	207	330	56	38	631	501,793	1 to 795
New-Hampshire.....	180	306	8	11	505	244,574	1 to 563
Massachusetts.....	471	600	27	173	1,271	737,630	1 to 580
Rhode Island.....	117	86	8	5	216	106,830	1 to 503
Connecticut.....	114	384	20	24	542	309,978	1 to 578
Vermont.....	144	254	8	4	411	291,948	1 to 710
New-York.....	683	1,463	138	56	2,340	2,498,921	1 to 1,038
New-Jersey.....	144	325	46	27	448	373,306	1 to 844
Pennsylvania.....	469	1,477	132	55	2,133	1,724,033	1 to 808
Delaware.....	22	30	21	7	80	78,065	1 to 976
Maryland.....	137	263	108	42	550	470,019	1 to 853
Virginia.....	317	735	327	54	1,433	1,239,797	1 to 869
North Carolina.....	152	428	192	29	801	753,419	1 to 940
South Carolina.....	91	285	121	16	513	594,386	1 to 1,156
Georgia.....	51	243	108	26	428	691,394	1 to 1,615
Alabama.....	39	193	100	25	357	594,766	1 to 1,655
Mississippi.....	14	102	66	16	198	375,651	1 to 1,897
Louisiana.....	6	49	38	7	100	352,411	1 to 3,524
Tennessee.....	103	596	124	28	851	829,210	1 to 974
Kentucky.....	305	490	132	48	975	779,828	1 to 799
Ohio.....	363	832	103	62	1,360	1,519,467	1 to 1,117
Indiana.....	110	377	47	28	562	685,866	1 to 1,230
Illinois.....	36	177	65	14	292	476,183	1 to 1,630
Missouri.....	42	160	50	18	270	383,702	1 to 1,420
Arkansas.....	9	36	13	8	66	97,574	1 to 1,478
Michigan.....	9	37	21	5	65	212,267	1 to 3,265
Florida.....	1	9	12	-	22	54,477	1 to 2,476
Wisconsin.....	1	7	3	-	11	39,945	1 to 3,613
Iowa.....	2	5	4	-	11	43,112	1 to 3,919
Dist Columbia.....	1	13	4	3	21	43,712	1 to 2,081
Total.....	4,333	10,192	2,103	829	17,457	17,069,453	1 to 977

4.—EDITOR'S ARM CHAIR.

Our exchanges this month are of unusual excellence. We have the *Westminster Review* for July, which Messrs. Leonard Scott & Co. republish, and I. O. Morgan is the agent. It abounds in able articles. *The Literary Messenger* at Richmond, Virginia, comes freighted with pleasant literature. It is the sole southern work in this field, and is a veteran. All should sustain it. *Hunt's Merchant's Magazine* has an able Commercial Lecture, and promises a continuation of them, from an English gentleman. The *Banker's Magazine*, Baltimore, by J. Smith Homans, has an able sketch of Eli Whitney, and various statistics of currency, precious metals, exchange, etc. The merchants and bankers should all have it. The *Western Journal*, St. Louis, becomes even more interesting. Then we have *Minor's Rail Road Journal*, Philadelphia, the only work of the kind in America—the excellent *Mining Journal*, New-York—the weekly *Literary World*—the able *Medical Journals* of Charleston and New-Orleans—the *North American Review* and *Silliman's Journal*.

Senator H. Johnson, of Louisiana, sends us an unusual quantity of valuable public documents from Washington for ourselves and the Historical Society. For the latter services every Louisianian will be grateful.

From the ample shelves of Morgan, Exchange Place, and J. B. Stiel, Camp-street, we have various late publications.

Mr. Richardson, of the University of Alabama, sends us a catalogue of the library of that institution, prepared by him. It is a handsome work, of over two hundred pages, beautifully printed and bound, and must have caused great labor. He deserves well of the literary community for his effort. We thank him for his courtesy.

THE LIGHT OF OTHER DAYS.

"You may break—you may ruin the vase if you will,
But the perfume of roses will cling to it still."

MOORE.

Reader. it will not repent the gravest of us, as Horace declares, sometimes to have sported, *non lucris*, etc., etc., or to have thrown away for the nonce, as we do now, tubular statements of crops, commodities, and commerce, to enter the field of lighter effort.—*Editor.*

On the world of poetry, and hope, and gay young life, with its giddy aspirations, that have all been swept away and submerged in the great ocean that we call the past! They mock us in the dim twilight of memory, and come flitting like fleecy summer clouds over the face of the present, to be dissipated and lost in the first rude concussion. Brighter than the brightest of the sun bow's hues, the evanescent colorings are blended and gone in the moment we would trace and define them.

Oh, bring me back—bring me back the flowers I have culled and crushed. I see such no more;—no more in the ways I wander. The odours now are rank in the compare; the blossoms shed not such soft incense; the opening blush refuses its sentiment; the petals are colorless, and the thorns have grown strong and wiry. Bring me back the beautiful past—the youth of hope and joy—the heart fluttering with each new prospect, and chasing away upon light wing the momentary intrusion of care.

Ho! ho! the faces that come peeping out from behind the curtain of the past—the bright eyes and laughing faces that seem to beckon us so witchingly, "come away, come away, you are with us no more, and we hear not your gay echos mingle with ours—you have the care-worn brow, and your tread is not so light, and the fires burn not so in your eye now, and the heart leaps not from its confines with such tumultuous swell, and the spirit is tamed—earthward and earthbent!"

"——— Ho, ho, how gaily they go,
On, on, for the merry, merry show."

Ha! ha! ha! and those bright eyes and laughing faces come mocking us from behind the curtain of the past, and we seek to join them again, and to mingle in their familiar haunts, and to lose ourselves in the holiness which encircles them; but a hand of ice falls heavy and a grasp of steel clinches, and they go flitting dimmer, and dimmer, and those beautiful visions of the past.

"If but a fleeting cloud obscure the sky—
If but a beam of sober reason play,
Lo Fancy's fairy frost-work melts away."

RODGERS.

I was of ye once, urchins, and I miss from among your numbers scarce a face I have seen beaming with delight at some rare frolic, hatched in your mischievous brains; and I could tease that old ginger bread woman as well as the best of you, and pluck the old man's grapes from his arbor under his very eye—but the old man is in his grave now, and not a leaflet tells of the arbor's ruin. I could shout as merrily, boys, as the foremost, and in the tussle and fisty war, passed not oftener than ye with the blackened eye and the begrimed face—forerunners of a world of trouble when nightfall must bring us home. But what matter—the spring time came, and the trees were ver-lant to be climbed for their berries, and the bird might be shot on the wing in a truant excursion beyond the forked road and the old chimnies; the top whirled as musically, and the summer breezes wafted the kite as high, and the winter's frost made the hug to leap under the vigorous stroke; and old Christmas came at last, with his gay carols, and the fagots blazed as cheerfully upon the hearth, and the jest went round with the pleasant warmth, as though the world were all a holiday, as it was to us boys. And we minded not school, then, and the awful fettle in the hands of its practised master—heaven bless the advancing years of that good man, for its toils were not unmix'd with sport, and the hours did roll away till we shouted bravely again upon the common! Ye were an hundred and more as I have often seen you assembled in the half ruined school house; but ye are all scattered and

gone throughout the wide world; and if so many of you yet live, we should meet perchance as strangers, boys who have sported together so many and many a time long gone by!

"Up springs at every step to claim a tear
Some little friendship formed and cherished here."

And then the graver academic days!—They are not so ill defined. In the old campus, and under the shady mulberries, how often met to discourse on many a theme pertaining more to aught else in the world than in the coming citation of lecture, till Tom, whose fame belongs to the college, and shall descend as an heirloom when his ghostly shadow only may glide through those halls, sounded from his belfry, and the noisy tread of feet told of a new shuffle of classes and of *our hour*. The rush then for seats, and the jostle, which many a luckless day caused exile from Professor's hall; and punishment when the breezes fanned the tall grass without, and the shaded *campus* invited to repose.

How easily recalled that excellent old *Prosser*, so frail in many points, yet so generous and relapsing withal, and of so varied, profound, and elegant attainments. In his happiest mood, how often have we sat for hours under his eloquent voice, and minded not the time that sped. I see him with ample hand rubbing his fleshy face or holding his sides, or with that huge, round, old-fashioned eye-glass which magnified letters into giants, catching an idea from the volume before him, and elaborating and working upon it with rare power until he had fashioned from it something new and impressive. But he is gone, that worthy old *Prosser*, where student and professor must meet in the last account.

"He tried each art, reproved each dull delay,
Allured to brighter worlds and led the way."

How many worlds have we measured "beyond the solar walk or milky way," whose obscure orbits baffled astronomers' ken, while the angelic choirs which swept the minstrelsy of the spheres seemed almost audible; and in the night—

"—————How beautiful is night;
A dewy freshness fills the silent air,
Like the round ocean girdled with the sky."

In the night how often with thee, young and enthusiast astronomer, when all the sky seemed in a blaze with the glorious lamps hung out from infinity, have we flung the daring glass over its broad face from pole to pole, and in what seemed but fleecy clouds, traced new and higher glories. And thou wert all happy then, watching some ill-defined comet, whose lengthened sweep threatened the stars themselves; some nebula ripening into worlds; some double or triple orb, or occultation, till "joyous day" seemed ready to chase night's damp dews from thy pale brow. And then, like Vulcan in the cave of the Cyclops, with all sulphurous gasses and vile exhalations, with furnace and crucible testing the refractory metals, or searching new and untalked compound from great nature's arcana; and I could enter into the enthusiasm which guided those labors, but it has all passed from me now, and I scarce remember how the stars look, so long is it since the eye might wander thither from the day's plodding concerns.—Gone are Sirius and Procyon, the chair of Cassiope and Berenice's hair—the poetry of science is all gone for me!

Helicon and Parnassus, and the Peneus, the shades of Ilianus and the Vale of Temy—now burning with Sapphic fire, now in soft Pindaric measures melting away; or with the old Greek whom seven cities claimed, transported to Olympus to the august conclave of the Gods.

"And now Olympus' shining gates unfold,
The Gods, with Jove, assume their throne of gold;"

—or down into the bowels of the earth, mark Pluto's dread throne shaken by the angry strokes of the sea-king:

"Deep in the dismal regions of the dead
The infernal monarch reared his horrid head;
Escaped from his throne, lest Neptune's arm should lay
His dark dominions open to the day,
And pour in light on Pluto's drear shades,
Abhorred by men, and dreadful even to gods"—*IL. xx., 73.*

Arming with Hector for the stay of Troy; fired with the fierce wrath of Achilles; weeping over Patroclus dead—

"Patroclus dead—Achilles hates to live,
Let me revenge it on proud Hector's heart—
Let his last spirit smoke upon my dart."—*IL. xviii., 120.*

Or mingling in the fierce field of war, when gods and men seemed almost breaht to breast, we see Diomedes, the son of Tydeus, send howling to heaven the fierce and bloody Mars himself.

ὁ δ' Ἰθραχε χάλκεος Ἀρης,
 Οὐσσιν ῥ' ἐννεάχιλοι ἐκίαχον, ἢ δεκάχιλοι
 Ἀνίρες ἐν πολέμῳ, Ἰρίδα ξυνάγοντες Ἀρης.
 Τοὺς δ' ἄρ' ὑπὸ τροῶος εἶλεν Ἀχαιῶς τε, Τρώας τε,
 Δείσαντας· τοσσιν Ἰθραχ' Ἀρης, ἄτος πόλεμοιο.

The woes of Œdipus, the passion of Medea, the soft and mellifluous strains of Tully, poured out in defence of the good old Archias—

"*Si quid est in me ingenii, Judices, quod Sentio quam sit exiguum; aut si qua exercitatio didicendi, in quâ me non injulter mediocriter esse veratum; aut si hujusce rei ratio aliqua, at optimarum artium studiis ac disciplinâ profecta, a quâ ego nullum confitor etatis meæ tempus abhorrui: earum rerum omnium, vel in primis hic Licinius fructum a me repetere prope suo jure debet.*"

His fierce ire and denunciation of the traitor Cataline; or those resistless torrents which bore down everything before them—the thunder and lightnings which blasted the enemies of Greece, and were heard against Macedon and the all-puissant throne of Artaxerxes!

Μα τὸς ἐν Μαραθῶ.

Our worthy friend and guide in these classic fields—be the Gods propitious if you still climb Olympus.

There were rare times in the uppermost halls of that old college, and I think they were consecrated to Clio, and if memory be not doubly treacherous, the very night is retained which drew together the practised disputants. What a tale could those ancient halls tell of fierce rencontre, when "Greek meet Greek," and all the heroic ran mad in the mazes of metaphor and the fire of declamation, drawn from the ample storehouses of Paley, Dugald Stuart, Tytler; and if I err not again, we did indeed sometimes adventure within those ponderous tomes which lie mouldering still as they did then in the old library adjoining, defying even sacrilege to disturb the religious awe of their presence. Nor have we always heard higher oratory than within those halls of Clio—the wit, the sarcasm, the innocent, but rich humor, the pathos, the occasional impetuosity. I have thee in my mind, who discoursed so beautifully of the "Oratory" and the "Genius," in his own person so well represented; who did sing—

"We may not linger; we have run
 Our pleasant, though too fleeting race!
 We must be gone—
 Others press on,
 To fill our scarce relinquished place!"

Mark we not the easy and graceful elocution, the mellifluous flow of fine turned periods, which in the Son so well reproduced the honored Sire. Nor will easily be forgotten, the formal, affected, yet always accurate, logical, often profound deductions of him who, however he might have provoked a smile by his conceits, challenged even high regard for his intellect. I pass these over and others little inferior which come clustering round. And thy quaint humor and endless jest, good John, which did indite diatribes upon us all in dove-tailed verse; we remember that our unfortunate frock did once catch it at thy hands. For "clad in rusty black" were we then, and "not laurel crowned;" and in our fancy's highest flights it was but apropos from the poet—

"See proud philosophy with b—s torn."

Yet I cannot draw the curtain, so seductive are the figures which would show themselves. Who of all that class can forget thee, my old friend, with the Castilian eye and countenance. If rare sport were to be had thou wert never far away. We never accused you of meddling much with grave text books, or of unravelling the metaphysical mazes of Professor's lecture. Oh no! You had much faith, too, as I remember, and will do you this justice, for it never entered into your mind to verify by the records the orthodoxy of the chair. It was all the same to you, teach *Duns Scotus* or *Peter Abelard*, and precious little did you know of either, or care for them. You it was that bought *De Officiis* for *De Oratore*, and found not the mistake till three months after, though every day the book had been opened before you in the class, and no eye seemed more intent than your own in following the readings of the learned Thebans. But fortune seemed to watch over you, and she spoilt you at last, —for it so happened you could always pass the examination, though never so ill pre-

pared, and they gave you a parchment diploma in the end, with all its great seal and dangling blue ribbons.

Once they mulcted you in the Halls of old Clio for extinguishing lights and disturbing the risables of that august conclave by the dextrous use of a quaint quizzing glass, and some villainous saltpetre, or other compound, ignited under their very olfactories. From the "one man power" you appealed, and according to custom then observed, a jury *from the vicinage*, of good and lawful men, were forthwith impanelled for the case. The Justice on the Bench lacked little else than the wig to look my Lord Mansfield, and never sheriff with cocked hat and trailing sword, tripping him at each step, conducted in prisoner with more dignity. Never more woe-begone prisoner! Alas, the light of the mirthful eyes of that rare sheriff and his broad laughing face; they are cold and still in death, and his spirit found the way to heaven among his country's warriors on the enemy's soil! I fail to recall the prosecuting attorney's ingenious argument, but remember that he quoted from Puffendorf, etc., which quotations proved afterwards to be but marginal notes of his own, for the occasion. I, as your retained counsel, rose late in the night, with so solemn a gravity, it seemed an "Empire's dust lay buried" there. But then remember that upon that speech, and upon your acquittal or condemnation, hung a supper in *L—s*'s best style, to be discussed with rare gusto that very night! On such occasion one might well be eloquent. Then was I to earn my first fee, an *honorarium* more deserving the name than needy attorney ever catches from litigious client.

Of that profound effort of forensic skill, but fragments remain upon the back of an old volume:

"We meet the prosecution in their own strong hold. We deny their authorities. They rest upon a statute misinterpreted and misapplied by them; and the whole superstructure which they have erected upon it falls to the ground at the first blush of reason. Can there be a legal gentleman present ignorant of the fact that the intention, and not the strict phraseology of the law, is alone to be regarded. [*Here his honor removed the pen from behind his ear, and waited for the authority which we gave him at last after turning over a pile of volumes, 2 Palcy, Chap. I, p. 103. Red morocco edition, which was not the one then used by the Junior class. His honor seemed satisfied, and ordered the counsel to proceed.*] The law is a dead letter when the *animus imponentis* is not taken into consideration. [*The Judge here called for a Latin Dictionary, doubting about the word animis, but the clerk not finding it, his honor said he would consider the point hereafter, and confer with his learned brethren in the court above.*] For it often happens, and indeed did happen in the very case before your honor, that the language of the law involve a very different meaning from the *quo animo* of those that framed it. To illustrate:—The statute applies to the case of extinguishing the circumambient and phosphorescent nucleus formed around the nocturnal luminary. [*Here the court remarked, that as it was evident the learned counsel was about to be high flown, he relied that the jury would be on their guard, and not suffer themselves to be carried away.*] Now this is declared highly penal. But take a case. It were not too great a strain of probability to imagine a conspiracy for the destruction of this very honorable society. [*One of the jury expressed a doubt, if there could be sufficient object for this, but yielded on the suggestion of the foreman, that enemies had already been excited on the part of the associations of the town by the high and distinguished poet occupied by that of the college.*] A Rye House Plot!—a Gun Powder Plot!! [*Judge, Jury, witnesses, audience, all started with the sudden vehemence of the counsel.*] Imagine an engine of terrible might constructed, but of such diminutive proportions, that it might be concealed within the wick of this candle [*about of derision from the benches—Judge looks daggers at Sheriff—Sheriff cries "order"—Counsel alone unmoved.*] I have a case in point infinitely more extraordinary, where an swain, manufactured by an ingenious artisan, vast enough when expanded to cover a hundred thousand men, but when folded up was capable of being passed through the eye of a cambric needle. I cite, your honor, and request the clerk to read 8 Arabian Nights 66. [*The argument was triumphant.*] The prisoner at the bar hears of this nefarious conspiracy at the very moment of fruition. He is seized with horror. The luminary is before him and the law. Shall he hesitate—*in quo momento pendit aternitas*—between the *quo animo* and the *quo verbo* of the law, whilst the one kills and the other maketh alive? No, gentlemen, no—never! never! the spirit of humanity would rise up and reprove; the sacred hopes of heaven, the long train of martyred heroes, and he would brave and defy, as I do at this moment, *your boasted dead letter law!* [*Here the counsel, in a glorious burst of patriotism, snuffed the candle before him entirely out with his thumb and forefinger, which left his side of the hall in darkness.*] If that be treason, make the most of it! [*A learned Sergeant here profoundly referred to what Burke had said long ago of lawyers, that they were the first to "snuff the approaches of treason," or tyranny, he forgot which.*]

"For if I quench thee thou flaming minister
I can again thy former light restore;
Should I repent—but once put out thy light,
[*pointing to the crowded audience.*]
I know not where's the Promethean heat
That can thy life relumine."

[*The counsel sat down amid thunders of applause, but if I remember right, either the jury hung, or they hung the prisoner.*]

But time passed, and the class, as classes had before, and classes have since, were assembled in commencement and scattered, with benediction, in the wide world. The immemorial custom of the parting dinner was not omitted, and the hours were

winged on their way to bring morning on our revels—the sentiment the song the jest, the feast of reason and the flow of soul—the speech which hushed down thunders of applause, and made to go ringing over the table dishes and glasses in universal chorus. Who was it that night for it comes dreamily upon me, that referred to “*the mists of the Serow*,” made famous by Curran, and enjoined upon us the advice of St. Patrick in establishing the order?

“Each year when your octaves approach,
In full chorus convene to let me hail you,
And when to the convent you come
Leave your favorite temptation behind you,
And be not a glass in your convent
Unless on a festival found,
And this rule to enforce I ordain it,
One festival all the year round.”

“Long, long after,” said the speaker, evidently affected, “softened by the remembrance of those attic nights,” in which the Judge before him, Lord Avonmore, had shared, “and those reflections of the gods, spent with those admired, respected and beloved companions, over whose ashes the most precious tears of Ireland have been shed. [Here Avonmore wept.] Yes, my Lord,” continued Curran, “I see you do not forget them. I see their sacred forms passing in sad review before you—memory; I see your painted and softened fancy recalling those happy meetings, where the innocent enjoyments of social mirth became expanded into the nobler warmth of social virtue, and the horizon of the board enlarged into the horizon of man. Yes, my Lord, we can remember those nights without any other regret than that they can never more return.”

“We spent them not in joys, or lust, or wine,
But search of deep philosophy,
With eloquence and poetry.”

What matter. In the halls of the advocate, thumping Coke, hunting down antiquated precedents, framing actions “in trespass” or “on the case,” or “chimeric bills,” which pluck out the eyes of the common law, as they do sometimes of little orphans, to prevent, perhaps, the results of a “discovery”; sacrificing to *Æsculapius*, not like Socrates, a cock, but the worthier immolations which young and inexperienced physio bring upon the altar; compounding vile drugs, or upon all wily loops and luges, setting up anew the trait tumbers of anatomy to grin horrid from its glass casement. Driving trade with keen watchfulness on the Exchange; at the Port; waiting the return of rich argosies; dreading what harm

“A wind too great might do at sea,”

and with nice calculations balancing “corn laws and foreign tariffs,” fencing almanacs and the signs of the heavens as the blossoming *g. syphium* bursts over the fields, or the pregnant heads of the tall orid bend over the broad acres. There are ye all found—sad contrast of the glorious past with the tame present—whilst we alone seem to have strayed away from the glorious shades of that old *Salmetto*!

Ah, well, well, it is all over, and can never be recalled. Foot to linger thus around an Eden where the flaming swords deny admission. Better far the philosophy which seizes the day and silences vain regret. Once for all—

“— Farewell!!
A soul which makes us linger.”

I shall wander no more amid those shades. The hill, the land cape, and the lawn, I bid you adieu! The progress of the pilgrim must not be staid but to indulge a brief tear or a passing emotion.

“And such is human life, so gliding on,
It glimmers like a meteor and is gone.”

As this is one of our youthful effusions, which in manuscript piles, lumber old trunks and cabinets, we make the pilgrim Oscar, plunging in the dark and stormy world of ambition and self-consciousness, cast away from him the memories of all the past, and of one memory infinitely dearer than the rest. Though a mere tiling of fancy, it is no bad type of the mood in which we close our paper.

Adieu! adieu! child of my day dream, and soft whispering presence of the night. I hurry away from the witchery of thy presence—the sore spells—the uncanny magic—strange infatuation! I hurry away! But alas, how stricken, and wounded, and lone, and desolate—I hurry away! Thou shalt dwell here, and touch the harp, and sing joyous notes, and wake melody, and glid the hills with thy soft strains—thou shalt dwell here, beautiful one! Thou wilt not dream of the wilderness, the stranger, the pilgrim, who will dream of thee in his own wild infatuation. There is no cloud for thee, but all is sunshine, and the sweet odours of flowers will be distilled in thy pathway—thou girl with the dark tresses. Away, away—I linger not—there are storms, and whirlwinds, and tempests, as well as sunshine and flowers in this world of ours—farewell!

“————— It is fit
The spell should break of this protracted dream;
I am not now
That which I have been, and my visions fit
Less palpably before me—and the glow
Which in my spirit dwelt is fluttering faint and low.”

THE
COMMERCIAL REVIEW
OF THE
SOUTH AND WEST.

ESTABLISHED JANUARY 1, 1846.

J. D. B. DE BOW, EDITOR AND PUBLISHER.

Volume VI. OCTOBER & NOVEMBER, 1848. Nos. 4 & 5.

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NOTE.—In the August No., page 155, article, "*Days of Grace*," occurred the following line: "the *drawers* failing, &c." It should have been *drawees*. "The stoppage of the New-Orleans House, Martin & Co., was caused by the *previous failures* of Lake & Co., in New-York, with whom ample funds had been placed to face all the drafts of the New-Orleans House,

 A quantity of most interesting Statistical matter, has been unavoidably crowded out, and will appear in the next.

THE COMMERCIAL REVIEW.

Volume VI. OCTOBER & NOVEMBER, 1848. Nos. 4 & 5.

L.—THE MONEY OF COMMERCE.

POLITICAL events in Europe are at this time producing singular and injurious influences upon the relations of all commercial countries. In the last thirty years, or since the peace of Paris, international communication has been rapidly extending itself all over the continent of Europe. The development of steam in boats and on iron rails has brought the remote countries of the continent into intercourse with the sea-board, levelled barriers to trade, and promoted that interchange of mutual production in which consists the actual commerce of nations. *Pari passu* with this progress, credit and commercial confidence have increased, and with the sale of merchandise, faith in the paper which represents its value has gained strength among the purchasers of produce. The individual promise of the buyer of goods has thus become the medium of payment for other purchases in distant regions, and the promise of an individual merchant has been received where that of a corporation would be rejected. The commercial principle thus developed, has gradually, in the scale of government, assumed a more potent voice, supplanting the old feudal military predominance of the aristocratic classes, and these have sought in general commotion the means of retarding the progress of the material interests of the masses of the people, because in that progress the ultimate inevitable destruction of all those privileges and distinctions which militate against the welfare of industry by detracting from its reward, is clearly recognizable.

As the commercial principle has developed itself, the precious metals have lost much of their importance, and they have therefore accumulated to an unprecedented extent in the great reservoirs of money, as the banks of Austria, France, England, and the United States. The returns of all these institutions show by analysis, that precisely in those years when prosperity is the most apparent and the amount of business done, or in other words, the quantities of the products of industry interchanged the most considerable, the idle accumulation of specie in the bank vaults has been the greatest. *This results from the fact that international trade to be healthy, is*

necessity one of barter, and the more extensive it is, the less occasion there is for specie.

In illustration of this position we may turn to the commercial trade as connected with banking in the city of New-Orleans. It will be found that the influx of produce from the "great valley," as well as the foreign exports, have yearly increased in value as the bank loans have become more moderate, and the specie in the vaults greater in amount. This is indicated in the following table :

VALUE OF PRODUCE RECEIVED AT NEW-ORLEANS, OF FOREIGN EXPORT—IMPORTS OF SPECIE—THE AMOUNT OF BANK LOANS, AND THE SPECIE IN THE BANK VAULTS.

	Value of produce rec'd.	Foreign exports.	Total rec'ts. & for. exp'ts.	Imports of specie.	Banks.		
					Loans.	Circulation.	Specie.
1840....	39,998,059...				41,711,214...	6,443,786...	3,163,943
1842....	45,716,045...	27,427,422...	73,143,467...		48,101,210...	1,979,039...	1,504,661
1843....	53,724,054...	26,653,924...	80,381,978...	10,407,371...	31,695,439...	1,248,632...	5,858,857
1844....	63,863,866...	29,443,734...	95,306,600...	7,727,323...	5,180,230...	3,021,378...	9,914,052
1845....	57,191,122...	25,841,311...	83,040,433...	2,249,138...	6,180,230...	2,556,891...	6,162,060
1846....	77,193,464...	30,747,533...	107,940,997...	1,872,071...	8,130,240...	4,213,318...	6,657,622
1847....	97,033,236...	41,783,303...	131,821,539...	6,689,050...	8,400,699...	3,709,053...	7,578,510
1848....	79,779,151...	39,348,722...	119,127,873...	1,845,808...	6,232,359...	3,963,669...	7,590,655

In the years prior to 1842, there were 16 banks in New-Orleans, with affairs so extended that it was impossible for them to resume payments. Their loans had been made not in aid of commerce, but to facilitate speculations which had proved disastrous. The question of resumption was much discussed, and it was freely asserted that, if the banks called in their loans and withdrew their notes from circulation, there would be "no money." This was a bugbear held out to frighten the advocates of specie payments. The evils of a depreciated paper currency became, however, so apparent, that resumption in November, 1842, could no longer be avoided. The result was as indicated in the figures, viz. a return of paper for specie, leaving but a small amount of bank notes in the hands of the public, and but little specie in the vaults. The consequence was, that 10 banks were unable to continue their payments, while six have done so, observing a restrictive movement, up to the present time. Now it will be observed that the receipts of produce at New-Orleans, and the value of that portion exported abroad in 1848, together, are nearly double the amount for 1842; yet the loans of the banks are this year equal to only one-eighth of the amount due them in 1842, and the amount of specie they hold is more than double that of the bills out-standing. Now, we are further to take into consideration the fact, that the business of New-Orleans flows in from many states, all of which had large "bank accommodation" during the general suspension, as for instance, Louisiana, Missouri, Mississippi and Arkansas together, had bank loans amounting to \$111,467,641, and the active loans in all those states together now reach \$8,493,710 only; yet we have seen above that the value of their products arriving at New-Orleans has doubled, while the specie lying in the bank vaults has swollen to the sum of the loans. In these facts, we have the clearest evidence of the unimportance of bank credits to commercial prosperity. It may be stated, as explanatory of the above table, that the foreign exports, or portions of produce sent to

foreign countries, is the same produce that is received by the river, but it passes into other hands, and becomes the basis of distinct business operations, and moreover does not include the exports from New-Orleans to other states; as, for instance, the exports from New-Orleans for the year ending with June, amounted to \$67,182,323, of which \$39,348,722, as above, was to foreign countries, and \$27,833,601 coastwise. In relation to the bank loans, it is to be remarked, that the figures indicate only the regular business notes. The same institutions have loaned near \$17,084,516 on mortgages, stocks, real estate, &c., being of the nature of loan office operations rather than of commercial banking.

The features indicated in the New-Orleans banks are also common to all commercial institutions, as seen in the following table :

SPECIE IN CERTAIN BANKS.

	England.	France.	New-York.	N. Orleans.	S. Car.	Ohio.	Total.
Jan. 1842.....	26,010,000	41,230,000	4,074,601	1,741,536	857,649	1,018,611	74,931,787
" 1843.....	54,665,000	43,182,000	6,174,317	4,580,737	817,131	524,076	136,405,680
" 1844.....	81,610,000	52,600,320	10,206,542	9,918,052	973,318	774,689	156,976,056
" 1845.....	70,920,000	48,965,048	6,893,236	8,138,987	901,176	818,100	136,627,545
" 1846.....	65,172,300	47,350,100	8,361,383	6,558,974	830,760	1,374,593	129,548,010
" 1847.....	72,130,240	14,913,967	9,191,254	6,345,316	643,841	2,026,551	105,251,167
Oct. 1847.....	43,900,416	17,732,810	7,418,929	6,192,376	660,435	2,004,446	74,710,951
Ap'l. 1848.....	70,851,912	16,643,536	6,722,396	8,233,274	571,592	2,590,130	105,214,680
Jan. 1848.....	65,371,830	36,182,734	6,751,338	7,590,655	358,111	2,681,471	119,236,139

We have here the most extraordinary fluctuations. The largest amount held by all the banks was in 1844, and that was a year of general prosperity. The amount of specie then in the institutions being large, a less quantity was of course in circulation. In October, 1847, however, after the disastrous failures and loss of confidence in England, specie became in demand for use, and it left the bank vaults. It would seem, so far from an increase of commercial transactions requiring an increase of coin, as those would teach who hold that there is not specie enough in the world to transact the business without the aid of bank paper, that actually the increase of business throws specie out of employment.

From 1842 to 1844, the specie at these four points increased \$82,000,000, coming out of the channels of circulation when business was active, commodities plenty, and their interchange by means of individual notes and bills of exchange unchecked by distrust. In 1846, the failure of harvests, by taking away one description of commodity, caused a demand for the precious metals for an extraordinary purpose, and the Bank of France underwent a drain so severe as to cause it to borrow £4,000,000 specie of the Bank of England. The continuance of this drain, arising from the same causes, brought the Bank of England nearly to ruin in October last. The reason of this was not so much the want of specie for the purposes of trade, as because distrust had fallen upon individual bills, and everybody, in all countries, wanted specie only. As the engagements outstanding were completed, and no new ones entered into, the demand for specie became less and less, and it continually returned to the bank, until the amount on hand is as large a moment of the greatest confidence. Thus a stagnation of

and a state of perfect confidence, seem to produce the same results, viz : to dispense with coin. The precious metals, therefore, act only in a moment as during revulsion, when nothing else would answer, and it is coming and going across the Atlantic at great expense, for no other reason than that other commodities are not available to discharge obligations, and promises cannot be trusted. It is to be remarked, that while the shortening of communications and the improvements in systems of trade are thus operating to lessen the importance of the precious metals, the supply of the latter is rapidly on the increase. The chief quarters whence they are derived now, are Russia and Mexico; the former for gold and the latter for silver. The mines of Russia have already become so prolific as to have produced an important influence upon the affairs of nations. The large supplies that came opportunely to the aid of the Banks of France and of England at the moment of the crisis last fall, alone prevented that general explosion of credits in a state of peace that may now possibly grow out of a general war. The mines of Russia are in Orel, discovered in 1829, and in Siberia in the same year. The quantity produced down to the close of 1846, as expressed in the official journal of St. Petersburg, and reduced to lbs. and dollars at the English mint price of gold, is 516,060 lbs., value \$158,946,480.

The Russian pood is 36 lbs. avoirdupois, and the English mint price of £3 17s. 6d, is at an exchange of 4.80, equal to \$308 per lb., giving the enormous sum here designated. The production of 1846, exceeding all former years, is \$19,093,536, equal to 12½ per cent. of the product since 1829. Since 1843 she has produced \$64,000,000 of gold, and the Bank of England has \$20,000,000 more in its vaults. This vast increase of the gold products of Russia has been one result of the long peace, which has operated powerfully against the Russian staple exports, as hemp, iron, quills, duck, &c. The growth of hemp in other countries of Europe has competed seriously with that of Russia; the development of the iron trade of England, has curtailed the demand for Russian; quills have been extensively supplanted by steel pens; and her exports of tallow have diminished under similar competition. All these causes have diminished the demand for the former products; her industry, and the increased application of self-labor to the gold mines, is producing the results indicated in the above figures. The mines of Mexico have continued to send forth some \$12,000,000 of silver per annum, feeding the circulation of France, where that metal is the standard, while England has been more than supplied with gold from Russia. In November last, the arrival of £1,000,000 in gold from Russia was the first opportune supply that flowed into the vaults of the bank. The large and increasing stock still held by Russia, and reported at more than £100,000,000, are a chief element in the strength which that power has acquired since the last war. In the last wars she bought gold of the Messrs. Rothschild for the supply of military chests. She now stands in the attitude of the source of supply for all powers. The continuance of peace would in a very short time have produced a very sensible depression in the value of the precious metals, by the double operation of their being less needed in commerce and greater in supply.

It results from what has here been stated, that all those theories of the credit system which assume that some species of paper money can be devised by which industrial commercial revulsions can be avoided, and commercial disasters averted, are based upon false premises. The actual money of a country, or of several nations, consists only in a very small degree of either the paper circulating as money, or of specie. It is really formed of all exchangeable products. So long as any country, or section of a country, has surplus products of its industry to sell, it has money. The Western hunter is not supplied with money from a bank counter, nor does he petition Congress to furnish him with banking facilities. Rifle in hand he plunges into the wilderness, and subsequently he appears with packs of furs that command cash in all markets. Thus every individual in the country, by producing some article of value, aids in furnishing a currency, because his surplus going to other nations is exchanged for just so much specie as is required, and no more. When this demand from any cause increases in magnitude, the production of gold is stimulated. Now it is very evident if the people of a country are not industrious, and produce no exchangeable wealth, that by no possible substitution of paper for coin can their wants be supplied. Ireland, as an instance, is occupied by some 8,000,000 persons. Of these, 5,000,000 occupy patches of land, and each raises as many potatoes as will with economy carry them through the year. The time spent in planting, hoeing, and digging those roots, completes the sum of his industry for the year; if we except such little jobs as are done in England, Scotland, and on the estates of the wealthy during harvest, to obtain as much money as will pay the rent of the patch which contains the year's food of the family, and which rent, by the system prevalent in Ireland, must be paid before the potatoes are dug. This has been the condition of Ireland. There has been no possible accumulation of property. With the consumption of the last potatoe of a crop, the entire products of a year's industry disappear. On such a people so situated, the potatoe rot fell, and there decayed in one week the only means of living for a whole year. With absolutely no property on the face of the earth to call his own, each cottar stands at his cabin door destitute and despairing. Is this the result of a bad paper money system, or the want of some well conducted bank? Clearly it is the result of long continued habits of unproductiveness. It is precisely the position of a North American tribe disappointed in finding game in its accustomed haunts. If in this case you supply them food, on their promise to pay "next crop," it becomes necessary that in order to pay they raise two good crops instead of one—an impossibility. All commercial revulsions resolve themselves into the same elements, and always arise from the primary fact that more has been consumed than produced. From want of a clear understanding of these general facts, in relation to what really constitutes money, much misapprehension prevails at times as to the causes of a money pressure, and this is particularly the case with that this year experienced in the Atlantic cities. In the usual course of trade, imper-

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The investments of money at the
very large, drawing severely upon
And the same feature, in a
New-York and Philadelphia markets,
the last two years have been drawn un
the federal government. The following
taken by the federal government :

Due at interest per cent.	Payable.	Amount.
1856		\$4,999,749 45
1867		12,890,372 00
1868		16,000,000 00
		409,860 00
		13,128,650 00
		\$47,418,631 45

been drawn from the actual capital of the
unproductive operations, in addition to

\$9,000,000 which was in the Treasury May, 1846, making an aggregate of \$56,000,000 drawn from the ordinary sources, on which various branches of industry depend for means, and used for unproductive purposes. By unproductive we do not mean of course that the lender does not get interest, but that the money expended and consumed in military operations has not reproduced exchangeable wealth, which is of itself capital, and which results from the employment of the money in manufacturing operations, or in the purchase of produce for foreign sale. In addition to the above, there has been \$25,000,000 at least invested in fixed property, public works mostly. It is matter of just pride that our capital has proved equal to these demands without disaster, that the government has had its wants supplied without foreign aid, and that at a time when revolutions in England and revolutions in Europe have paralysed a large additional amount of our active capital; but it is evident in the heavy prices of stocks, the embarrassments of loan holders, and the rates they pay for money, while regular dealers encounter a severe competition in the market, that the financial capacity of the country has been severely taxed. In fact it could not have gone through the crisis but for the large amount of capital received from Europe in exchange for produce, which but for the failure of the English harvest would not have been available. The present pressure serves to check the investments of capital, while the prospect for the coming year is that such a further accession of capital from abroad will take place, arising from renewed demands for food, as will make good existing demands and again leave a surplus for all wants. We may reflect what would now have been the case in regard to the supply of capital had the government not taken from the market \$56,000,000 in the last few years! If in the next two years the European demand for American surplus produce should equal that of the last two, we may confidently look for a permanent reduction of the rate of interest in our commercial cities. The price of money in London during the last six months has been 2 a 3½ per cent. per annum, and in the United States, under the borrowing of the federal government and of corporations, and an active demand for industrial purposes, it has been 6 a 7 per cent. with an occasional rise above that.

It is evident that what is usually called the "circulating medium," and which has been supposed to exercise so very potent an influence upon the welfare of commerce, has in reality, whether it consists of paper or the precious metals, but a very small influence upon the supply of the money market, since the discharge of national or sectional commercial debts depends not upon the quantity of money but upon the quantity of surplus exchangeable products of industry that they may have to export. Yet we find cliques of superficial financiers in all countries, since the time of the Mississippi scheme, constantly seeking to discover some mode of issuing promises which shall supply the wants of industrial productions, and prevent the disasters that inevitably follow over-consumption. The regulations of the Bank of England are of this nature; and it would seem that experience affords no instruction to those who adhere blindly to such

theories. Under the charter of 1832 the Bank of England was confirmed for ten years, in its power of issuing notes to circulate as money on its credit, and this it did according to its avowed rule, in the proportion of three dollars of paper for one of specie on hand. In the ten years during which this renewal of charter had effect, many and severe revulsions took place from over-consumption of goods, losses in foreign investments, and by failure of harvests; yet these evils were mostly ascribed to the power exercised by the bank of issuing its promises on its *credit* to circulate as money, and in 1844 the power was taken from it. The charter of that year made a nominal separation of its affairs into "banking," and "issue departments;" the latter was to retain all the specie of the concern, and to issue notes, dollar for dollar, that is to say, it was required to receive all gold presented in exchange for notes, and to pay gold for notes whenever demanded. The banking department having no control of this matter, conducted its business of discount and deposit on the notes paid into it for government taxes and individual deposits, precisely as all other banks did their business. These provisions worked smoothly as long as government business was prosperous and exchanges were in favor of England. In 1846, however, the crops failed, and it became necessary for England to buy largely of foreign nations, while she both exported less, and produced less to export. It followed, that not only must her available capital in the shape of exchangeable goods and produce go abroad, but that in the shape of coin also, and the amount in bank fell from £15,000,000 to £8,000,000 in the year ending with October, 1847. The money market was therefore very tight. The effect of this diminution of coin in the banks was to decrease the notes held by the bank as a fund from which to discount. Now it was maintained that if the bank should be allowed to lend its notes on credit as before the change in the law, that it would remedy the evils resulting from a diminished export of goods, and a purchase of \$150,000,000 worth of food extra. So seriously was this chimera entertained, that the government authorized the bank to violate the law, and lend its notes on credit. At this juncture, however, the import of grain having subsided, and goods again going forward for sale, merchants again began to collect debts and allow deposits to accumulate, making the market easy without any violation of the law. From that time money has been abundant in England, not because money, *per se*, is any more abundant, or that the mode of issuing it has changed, but because the consumption of imported goods has been less, and the production and export of exchangeable values greater.

The condition of France, from its long continued bad and extravagant government, which has, as a general policy, sought to prevent the improvement of the condition of the people in order to prevent the growth of their political influence, is very deplorable. For the last eighteen years corruption has been the means of government, and to make it effectual it has been necessary to draw almost all the *earnings of the people* into the hands of the central government with a view to its disbursement through official channels emanating from

the supreme head. Such a state of things has been ruinous to trade and industry. The government has drawn from producers annually, \$200,000,000, to expend it upon idlers and non-producers; it has resulted that there could be no accumulation of capital by which to keep the people employed, or develop the national industry. Hence the extreme poverty and retrograde condition of the people. The new government recognizes the ruin, and acknowledges the necessity of improvement, but it has not yet discovered the true means of attaining the object. Great as was the expenditure of the Orleans dynasty, that of the Republic has been greater, amid shaken credit, paralyzed industry, and stagnant commerce. Some mode of relieving this pressure has been hoped to be discovered, and the National Assembly has been beset with paper money projects. Taught by the experience of the old revolution, the provisional government declared its determination not to resort to paper money, at the same time some of its members have since expressed their belief that it is the only resort. Paper money, as a means of taxation, is of a different character from the same instrument as a medium of commerce. In the former case it puts into the hands of the government, which issues it, the wealth of the people, without an increase of direct taxation. Thus, if a nation collects \$100,000,000 taxes in a year in cash, it can issue 50,000,000 paper dollars to be received in return for taxes. By this operation it will have increased its resources to that extent. If it continues to use this resource, the paper will fall in value gradually as it is uttered, and being taken in trade passes from hand to hand, leaving a slight loss in each, until finally it passes out of existence as worthless. Almost every individual in the community will have lost something by the use of the notes, and government will have been well supplied, with less odium than would attach to raising the same amount of means by direct taxes. But the deleterious effect of this process upon the general trade is infinitely greater than that of direct taxes. The new government have therefore sought to avoid it, and to appeal to the good sense of the people to support the new order of things by taxes. To effect this, however, strict economy is a matter of first necessity, in order that the burden of taxation might fall as lightly as possible upon the industrious and holders of property. On the contrary, expenditure was increased, to pander to the passions of the dissolute, the idle and the turbulent, in order to purchase their support at the expense of the really valuable citizens. It has resulted that the latter were dissatisfied with a Republic which sought to maintain itself at their expense. The Republican members of the government seem to have felt the evil, and therefore advocated the use of paper money as a means of supplying the demands of one class without driving the other to resistance. The horrors of the old paper system are, however, too rife in the memory of Frenchmen, to readily allow of their reproduction, and many schemes have been proposed to "furnish a currency" for France, under the idea that by promoting the issue of paper upon private security, a ruinous depreciation may be guarded against. This would not permit of an issue by the government; but it is supposed that the abundance of

money would promote the views of the government by making the payment of taxes more facile; that is, that it would raise prices, stimulate industry, enhance consumption, and, by swelling the sum of individual savings, lead them to contribute more freely to the wants of the state. This reasoning is based on the fallacy that it is paper money and not the successful production of real exchangeable wealth which promotes the welfare of commerce.

A bill has been introduced into the French Assembly to furnish a paper currency for France, in many respects like the free banking law of New-York, as it originally stood. The bill proposes that the government in Paris should issue, as money, bills from \$5 to \$200, to be made a legal tender, but inconvertible into specie, upon mortgages, of all real estate at three-fifths the value of the property, exclusive of mortgages. The loans to run for terms not over 15 years, and to bear $3\frac{1}{2}$ per cent. interest. Every five years a new valuation of the mortgaged property to be made. This is in fact a proposition to turn the government into an immense loan office; the bills of which, issued on all the real property of France, to be legal tender each in the arrondissement of the mortgaged property. The value of real property in France is nearly as follows:

11,000,000 proprietors.....	\$4,500,000,000
Mortgages, report of Director of Domains.....	2,065,000,000
Balance.....	<u>\$2,435,000,000</u>

The new bill authorizes issues to three-fifths this amount, or \$1,461,000,000—a very respectable amount of paper money. If this should be carried into effect to one-tenth of its capacity only, France would be flooded with paper money, which would operate to the repudiation of the present debt and the discharge of all debts upon real estates—as thus: The Director General of Domains states that existing mortgages amount to \$2,000,000,000 on a specie basis: if the holders of mortgaged property apply for government money on this extent and pay off old mortgages, they would then have afloat as much paper money as would make all other debts worthless. This paper money it is proposed to make a *legal tender* and *inconvertible*. Hence a moderate issue will sink its value rapidly. The same bill authorizes the mortgagor to pay off in paper or specie when he pleases. Hence, for a little money, he will soon clear his debt to the state. The proposition is one for general spoliation of creditors, public and private. But as the money is not to be issued by the state for its own expenses, it will aid the finances in no other way than by facilitating the collection of taxes and virtually repudiating the debt. The interest the state will draw from loans will be indeed a revenue, as thus: If \$2,000,000,000 is loaned at $3\frac{1}{2}$ per cent. the state will derive \$70,000,000 income, payable in this paper, which in such a volume would be of no value. A debt-ridden and tax-oppressed people like those of France must, sooner or later, acknowledge the utter bankruptcy, *social and public*, to which they have been reduced by a long series

of bad governments, and which in fact is the source of all the evils which now afflict them.

This plan has been supposed to assimilate to the New-York system of banking founded upon state stocks, which is, however, but a system of individual shaving in a small way, and in no degree affects the general abundance of money.

The legitimate object of banking, if it has any object at all, is for those possessed of money to lend it on favorable terms to those who need it in the furtherance of their business, and who pay the lender a fair rent for its use. The incorporation of banks had for its object the collection of many small capitals into a common reservoir, to be applied in the same way, the profits of the proprietors to grow out of the rent of their capital.

Inasmuch as that the furnishing of corporate paper promises to circulate as money has ever in the United States been persisted in, it has always been found that on the occasion of every pressure, the promissors failed, and the public were large losers by the outstanding promises. It was, of course, always necessarily the case that the loss fell on poor persons, because, as this money is used only in retail trade, those only are holders, who obtain it for labor or goods, to make small purchases. To guard against this evil became imperative, and in 1829, in the State of New-York, a law called the Safety Fund Act was passed. The leading features of this law were a requirement that no bank should issue more than twice its capital in bank notes, and that such bank should subscribe, annually, a sum equal to half per cent. of its capital, and these payments should, together, constitute a fund, out of which should be redeemed the notes of any bank which might fail. The immediate effect of this law was to promote confidence in the notes, and therefore to enable the banks greatly to extend their circulation. It is not necessary to follow the fortunes of the banks under this law; suffice it to state, that the circulation increased until general suspension resulted in 1837, by which all the bank charters were forfeited. The legislature thought proper, however, to legalize the suspension, on condition that the circulation should hereafter be restricted to amounts proportioned to capital, and less than the extent allowed by the safety fund act. As the limits of the safety fund act had never been reached by the actual issues, the wisdom of reducing the limit was not manifest. All the banks resumed in 1838, and so continued, until, in 1841-2, ten of them failed, throwing upon the safety fund a charge of \$2,577,927 67. This was a sum far above the means of the fund, which was not only entirely exhausted, but all the contributions of the remaining 83 banks, up to the expiration of their charters, will be insufficient by \$44,573 to discharge the demands of bill-holders for the banks already broken; hence, if any more fail, there is nothing from which to discharge their claims. The entire operation of the fund, from its commencement, to September, 1847, was as follows:

STATE OF NEW YORK.

Assets.....	\$2,777,926 67
Liabilities, &c.....	179,416 74
Surplus fund.....	40,763 06
	\$2,719,035 41

two branches; and consequently reached \$16,926,918, without any security. The safety fund banks, until the 1st of January 1861, had a surplus of \$1,337,011 91.

The New York Senate, the comptroller of the state, and the safety fund to the state, for state purposes, have provided for bank losses already incurred on different dates, as far forward as the 1st of January 1861. In the meantime, the state has received on said stock over and above the amount on deposits to the credit of the state, an amount to be paid by the fund by means of payment, including the way of contributions from the state, is \$1,386,728 68—making the total for the period, \$44,573 20.

It is manifest that some further provision for the security of bill-holders, and a general law, which any person or persons might apply to the property with the comptroller of the state, notes wished to be circulated, and the notes issued by the comptroller. At the same time, the principle of making the notes issued by the state, and not credit only, is sound. It is the principle of individual bills, by which we have conducted our business is conducted. The principle of the legislature as the basis of future legislation, the capacity of two powerful classes; one class, saw in it the subversion of the principle of the law, and they determined to do so. The current of public opinion ran in the same direction, and they apparently fell in with the view, and through the legislature, from the principle of the original law, the principle of the original law, severally done. No less than ten years, the effect of which has been gradually to subvert the principle of the free banks, and thus to operate as a general law. The principle of neither granting nor renewing bank charters being incorporated in the law, all the present charters will expire on the 1st of January 1861; consequently the whole principle of the issuing of notes goes, must be considered as the general law, made more stringent

by reason of the efforts of the chartered bank interest to oppress its rivals. Since the enactment of the law of 1838, there have been two descriptions of money—the one safety fund, with no security whatever, and the other fully secured by the deposits of property.

The progress of the state circulation has been as seen in the following table:

FREE AND CHARTERED CIRCULATION OF THE STATE OF NEW-YORK.

	Safety Fund.	Free.	Total circulation.
1837.....	24,198,000.....	none.....	24,198,000
1838.....	12,432,478.....	none.....	12,432,478
1839.....	19,373,149.....	2,500,000.....	21,873,149
1840.....	10,360,592.....	6,012,000.....	16,372,592
1841.....	15,235,056.....	5,253,067.....	20,588,123
1842.....	12,372,764.....	3,642,437.....	16,185,201
1843.....	8,336,266.....	3,695,603.....	12,031,871
Nov. 1844.....	15,755,955.....	4,396,264.....	20,152,219
" 1845.....	15,831,058.....	5,544,311.....	21,375,369
" 1846.....	16,033,125.....	6,285,397.....	22,268,522
" 1847.....	16,926,918.....	9,310,338.....	26,287,256
March, 1848.....	14,391,504.....	8,656,522.....	23,047,826

The free banks have increased \$5,000,000 since 1844, and the chartered but \$1,000,000—a fact which has excited unusual activity on the part of the monopoly bankers. It is evident that the circulation is passing into the hands of the free bankers, and their circulation, based upon property, will become the only substitute for the precious metals in the retail channels of circulation. Before investigating the operation of these principles, we will sketch the position of the safety fund banks. We have seen, as above, that the chartered circulation is \$16,926,918. This amount is issued by 79 banks and two branches, the aggregate capital of which is \$27,941,460. The charter, which first expires, is that of the Merchants' Exchange Bank, in 1849, and the longest charter expires in 1866, except that of the New-York Dry Dock Company, which claims to be perpetual. The Manhattan Bank has also a perpetual charter, by virtue of which, it claims to be exempt from the regulations of the legislature imposed upon all other banks. These banks have had their circulation governed by three laws, that of 1828, in accordance with most of the charters, fixing the amount they may issue at double the amount of capital. The law of 1837 restrained the issues in the following proportions:

Capital of.	May circulate.	Capital of.	May circulate.	Capital of.	May circulate.
100,000.....	150,000.....	250,000.....	225,000.....	600,000.....	450,000
120,000.....	160,000.....	300,000.....	250,000.....	700,000.....	500,000
150,000.....	175,000.....	400,000.....	300,000.....	1,000,000.....	800,000
200,000.....	200,000.....	500,000.....	350,000.....	1,490,000.....	1,000,000
				2,000,000.....	1,200,000

This law reduced the aggregate issues allowed from \$35,882,926 to 822,790,000, but it affected only country banks with small capitals, because the city banks and large country institutions can never get out even the lower amount authorized. In the last two or three years a considerable extension of banking ~~has~~ been effected, and the chartered bank interest

sought to produce an alteration of the law of 1837, in order that they may increase their issues. To this effect they alleged that the law of 1837, restricting the issues, was enacted without the constitutional majority. As, however, they depend on that law alone to exonerate them from the penalty of charter forfeiture, for the suspension of that year, they have not pressed the matter. At the last session of the legislature, however, they procured the passage of a law repealing the restriction of the act of the law of 1827, in respect of banks whose capitals exceed \$200,000. The new law allows these institutions to increase their issues to the extent of their capitals; and the chartered circulation, therefore, is authorized by charters at \$35,882,920; by act of 1837, at \$22,790,000; by new law, \$28,145,860, or double the actual circulation, which is \$14,330,561.

In respect of this law of April, 1848, the chartered banks may be divided into three classes, viz: those in the city, having all large capitals, but which can never circulate but a small proportion of bills, for the reason that the country banks, being allowed to circulate their bills at a discount in the city, always usurp the channels of circulation; 2d, the country banks, of capitals of \$200,000 and less; and 3d, those of capitals over \$200,000. It is this latter class only that are affected by the new law, which was passed seemingly for their especial benefit and exclusive profit and enjoyment. The capitals and circulations of these three classes of banks, at the report of Nov., 1847, was as follows:

	Capital.	Circulation.	Circulation p. c. of capital
City Chartered.....	\$16,998,200.....	5,650,360.....	33
County and under \$200,000...	6,263,660.....	6,413,411.....	103
“ over “ ..	6,679,600.....	4,863,147.....	74
Total chartered banks.....	\$29,941,460	16,926,918	

This inequality of circulation is the result of legislation. The permission to allow country banks to redeem their notes in the city at a discount, as we have said, enables them to usurp the place of the city notes at the expense of the people.

The banks with capital over \$200,000 are 19 in number and their aggregate circulation, authorized by act of 1837, being \$5,125,000, by new law \$6,679,600, and the actual circulation \$4,863,137, keep their limits full.

These banks can keep out in “fair weather” more than the allowance by the law of 1847, which was designed to prevent so great an expansion as would lead to revulsion. The new law removes the restriction, and permits an increase of 25 per cent.

The new state constitution, however, makes it the duty of the legislature to require “ample security” for the redemption of these notes, and the legislature *performs* this duty in the following clause:—

“It shall be the duty of the Comptroller to require, in addition to the contribution now made to the Safety Fund, of all banks asking for or receiving any bills or notes under and by the provision of this act, beyond what they are authorised to issue by the act of 1837, ample security, in accordance with article 8, sect. 6, of the Constitution of the State.”

The responsibility is thus turned over to the comptroller; and the question turns upon what is "ample security." In a circular under date of May 2d, that officer acknowledges the vagueness of the requirement, but very properly says that the legislature specified what was meant by "ample security" in its requirements of the free banks. He therefore requires that when a chartered bank wishes an increase under the law, it shall deposit with him the same securities as are required by the new law in relation to free banks, viz: an equal amount of New-York 6 per cent. stocks, or one-half 7 per cent. mortgages on unincumbered real estate of not more than two-fifths of its value, exclusive of buildings. This is very just and proper; and in order to distinguish which bills of the bank are to be redeemed by these stocks, he requires that a particular plate shall be prepared for the new bills. Each bank will then have two descriptions of issues, one secured and the other not, as thus: the Rochester City Bank, as an instance, is, by the law of 1837, allowed to issue \$300,000, and it has that amount out; the new law allows an increase to \$400,000; should it issue these, it must buy stocks and pledge with the comptroller; it will then get \$100,000 of a new plate, and when it fails, \$300,000 of old issues will probably not be paid at all, and the new issues will alone depend upon the securities. But another difficulty arises; the safety fund charters contain the following clause:

"The said corporation shall not, directly or indirectly, *deal* or trade, in buying or selling any goods, wares, merchandise or commodities whatsoever, or in *buying or selling any stock created under any act of the United States, or any particular state unless in selling the same, when truly pledged by way of security, for debts due to said corporation.*"

It is a difficult matter for a bank to "buy stock" to pledge with the comptroller for issues, without infringing this charter clause. The comptroller, however, thinks there will be no difficulty, inasmuch as that he supposes it never could have been the intention to prevent them from buying stock to secure their issues, and that if it did, the law of 1848 must be supposed to have modified the charter in that respect. This reasoning is very loose. When the charters were granted, no idea of securing issues with stocks was ever broached; consequently no "intention" could have had any relation to it. The law of 1848 does not specify any securities. The comptroller very justly, we think, infers a description of security from another law, but that inference does not nullify a charter enactment. The just conclusion is, that the law of 1848 is a nullity; it is utterly inoperative. The Constitution forbids further issues without "ample security." Acts of the legislature fully establish what ample security is, and the charters of the banks restrain them from giving that security; hence the new law is a dead letter, a bungling abortion of knavish speculators and stupid lawyers.

It has thus become, in a manner, a fixed principle of New-York legislation, that paper money must represent actual property, dollar for dollar. Behind each paper dollar issued must exist such sound property as will, beyond doubt, realize the specie to fulfil the prom-

ise on the face of a note the moment a banker fails to do so. This principle will ultimately be adopted in all the states, as has been the case in New-York. However, a severe contest will be carried on by the chartered banks to deceive the people and pervert the laws. It is, therefore, of the greatest importance that the matter should be fully and generally understood. The whole law, numbering 33 sections, embraces two systems : one of which, based on sound principles, is embraced in the first 14 sections of the act. The basis of this system is contained in the 2d and 3d sections, which we transcribe in full.

" SEC. 2. Whenever any person, or association of persons, formed for the purpose of banking, under the provisions of this act, shall lawfully transfer to the comptroller any portion of the public stock, issued or to be issued, by THIS STATE, such person, or association of persons, shall be entitled to receive from the comptroller an equal amount of such circulating notes of different denominations, registered and countersigned."

" SEC. 3. Such person, or association of persons, are hereby authorised, after having executed and signed such circulating notes in the manner required by law to make them obligatory promissory notes, payable on demand, *at the place of business*, within this state, of such person or association, to loan and circulate the same as money, &c.

The 7th section provided, that instead of making the whole deposit in stocks, one-half might be in sixper cent. mortgages upon productive real estate, worth double the amount of the mortgage. The banker was to receive the interest upon these securities as long as his bills were in good credit, and fully covered by the securities. When the securities diminished in value, the interest was to be retained by the comptroller, or the banker required to surrender a part of his bills, or to deposit more stock. This was a sound principle.

We have said that two powerful classes were excited by this law project ; of one, the chartered banks, we have already spoken ; the other was composed of the speculators. It is known that land speculations had run to an extraordinary extent in the few years preceding the revulsion of 1837, and that vast quantities of real estate and worthless mortgages were held at high prices by persons who sought some means of realising. This banking law was fastened upon as that means, and the door thrown open to ceaseless frauds by giving greater latitude to the provision. The 15th section of the law provides as follows :

" SEC. 15. Any number of persons may associate to establish offices of discount, deposit and circulation, upon the terms and conditions, and subject to the liabilities prescribed in this act ; but the aggregate amount of the capital stock of such association shall not be less than \$100,000."

The phraseology of the first section was, "persons or association of persons," and those sections specified only the manner in which the notes were to be secured ; to be payable at the place of business, and "*loaned*" as money. Commencing with the 15th section, the phraseology is "company," "association," and "persons." The liberty to form capitals applied to associations only, and not to

the individual banker. By this means the most absurd speculations were engendered. Holders of sham mortgages associated, valued each others property, deposited certificates, and became a "bank." On the credit of being thus an established bank, they were enabled to purchase the stocks of the western states—these being pressed upon the market. These stocks were deposited with the comptroller, and the bills he issued upon them were often the only real money of the concern.

As an indication of the mania which resulted from these provisions, we may state, that of hundreds of banks projected, sixteen only proposed capital, the aggregate of which was \$487,680,000.

It is evident from this fact, that "small ideas" were not prevalent in the community on the subject of banking at that time, and that experienced bankers and old merchants were those who headed the delusion. The practical part was, however, for holders of real estate unavailable from the bursting of the great speculations of recent years, to turn that property into bank shares, and thence into money. This was the basis of the movement. Of all the above banks, the Mechanics' Association and the American Exchange Bank alone remain. The proceedings of the remainder were as ridiculous as their pretensions were preposterous.

This working of the law induced, in 1840, an amendment, making New-York stock equal to 5 per cent., alone receivable as securities, and bonds and mortgages for an amount not exceeding one-half of the whole amount of securities, and to an extent not greater than one-half the value of the land. This, by a new law, passed April, 1848, has again been restricted, and the stocks must now be equal to a New-York six per cent. stock, not to be taken over par, or at more than the market value, and the bonds and mortgages in amounts not greater than \$5,000 each, bearing 7 per cent. interest, and to an extent not greater than two-fifths the value of the unincumbered land, exclusive of buildings. This regulation doubtless increases the security of the bill-holder, while it at the same time restrains the movements of the bankers. These restraints could not, however, have passed, were it not for the desire of the chartered banking interest to oppress the new system; but, by a happy retribution, they have in some degree fallen into the pit themselves, inasmuch as the comptroller has, as above described, ruled that under existing laws, if the chartered banks wish to extend their circulation, they must comply with the same terms of security for bills.

In the working of the free banking law thus far, it would appear that 139 banks have been started under it. Of these, 85 are in operation; 21 have been closed by their proprietors, without loss to the bill holders, and 30 have been closed by the comptroller. Of these, 25 have been settled at 76 per cent. average.

It appears that the radical errors that have been discovered in the working of the law, are, 1st, that the securities were not restricted to the stocks of this state, or the United States; 2d, that a sufficient margin was not allowed for a time of pressure, when alone the securities would require to be sold. Instead of giving dollar for

dollar, no more than \$90 of bills ought to be delivered for \$100 of stock. 3d. In taking mortgages, power ought to be by law conferred upon the officer to foreclose and sell on the spot, with recourse to chancery. 4th. Mortgages should be in small sums, readily brought within the means of capitalists; and 5th, the redemption should be rigidly enforced at the actual place of business.

Under this law, however, the whole operation has run into an abuse of another nature. By its means, individuals obtain an income by borrowing of the public, not paying an interest for that which they borrow, but charging the public an interest. Thus, an individual with a small capital—say \$5,000 or \$10,000—purchases therewith stock, and deposits it with the comptroller, who issues an equal amount of circulating bills. These bills are disbursed in the purchase of more stock, and the operation repeated until there are some fifty to sixty thousand dollars deposited, and an equal amount of bills in circulation as money. These latter are suffered to circulate at a discount, and are redeemed by the promisor or his agent, at $\frac{1}{2}$ a $\frac{2}{3}$ per cent. discount. The profits of this redemption pay the whole cost of the operation, and leave the proprietor in the full enjoyment of \$70,000 of New-York six per cent. stock, or \$4,200 per annum. The manner in which banks are got up is fully elucidated in the detailed statement of the affairs of the Pratt Bank, investigated by the comptroller. Mr. L. F. Tiffany is the owner, having purchased the concern, that is, the state stock pledged with the comptroller, and fixtures, of Mr. Pratt, in April last. The whole means of the bank are as follows:

Capital.		Appropriated.	
Originating of the note of		L. F. Tiffany's note.....	\$20,000 00
L. F. Tiffany.....	\$20,000 00	" ".....	6,454 45
Borrowed by circulation....	49,995 00	In Patchin Bank.....	11,788 73
" of state of N. York.....	20,680 98	New-York State Bank.....	50,000 00
" of individuals....	17,372 98	Other accounts.....	16,382 76
		Bank Notes.....	2,940 06
		Specie.....	474 30
Total means.....	\$108,048 86		\$108,048 86

In addition to the above, \$26,454 45, Mr. Tiffany is endorser on a note of Henry Randall for \$1,500. The result is, that this banker has collected a focus of credits, out of which he has obtained \$41,434 45 more than the amount of his own note, which constitutes the capital of the bank! \$474 specie to meet \$49,995 circulation, being 100 to 1! The commissioner attempts to explain why Mr. Tiffany has a balance of \$11,000 remain with the Patchin Bank, but says nothing of \$50,000 with the State Bank. The probability is that instead of that sum being due from the State Bank, it is actually due to that concern. It is probable that the bank advanced the stock in ledger with the comptroller for the \$49,000 of circulation, and of course \$50,000 is turned over to it out of other borrowed funds.

The same result is the legislation in Ohio upon this subject.

The Ohio bank law of 1845 authorizes 75 banks, of which nine were old banks, including the bank of Wooster, recently exploded. It therefore authorized 63 new banks with aggregate capitals of \$6,150,000, and circulation, \$12,291,000. The 75 banks authorized, have two modes of organization laid before them; viz., as branches of "a State Bank of Ohio," or as "Independent banking companies," on a plan something similar to that of the free law of New-York; a common provision which applies to both plans is, that before commencing business, 30 per cent. of the capital shall be paid in, in specie or specie funds; one-half, or 15 per cent. in "gold and silver coin;" and moreover, it is provided that this 15 per cent. of gold and silver coin "shall at all times be on hand." If the ratio of 15 per cent. shall be diminished, the bank to cease doing business, except to purchase sight bills of exchange until it is made good. This *keeping* of 15 per cent. of specie *on hand* has been tried in New-York, in Alabama, and elsewhere, and its gross absurdity always made manifest. Of what use is it that a bank has the gold and silver, if the law forbids it to part with it? To comply with the terms of the law, the bank must have at least 30 per cent. in specie, 15 per cent. for use, and 15 per cent. *to keep* according to law. The 56th section, however, removes the difficulty entirely, as follows:

"Sec. 56. Actual deposits with any solvent bank or banker, of established credit in the cities of New-York, Boston, Philadelphia or Baltimore, subject to be drawn against at sight, in gold and silver coin, shall be deemed equivalent to gold and silver coin whenever used in this act."

Hence, if a bank pays out its notes for a draft on either of these cities, that draft is *gold and silver coin*. Thus, if the circulation is \$90,000, and the specie reserved is reduced to \$10,800, the bank has only to pay out its notes for a New-York draft of \$5,000, that draft being *gold and silver coin* within the meaning of the act, it will have \$15,800, or 16 per cent. on hand, and its quota more than restored. On this basis, when seven banks were formed, intending to do business as branches of the "State Bank of Ohio," they were to organize, and each to appoint one person to be a member of a "board of control." This "board of control" locates itself at Columbus, elects a President, and becomes incorporated as the State Bank of Ohio. The members fix their own salaries, each representing one branch, and having a vote for every \$50,000 his branch has in circulation. The basis of representation are, therefore, the promises of his constituents; the more they promise the more power has he. This board is empowered to investigate and examine all the branches, reduce the circulation, if necessary, &c. Now the place of each member is dependent upon the bank that appoints and pays him. Yet this appointed and *paid servant* is constituted a supervisor over his employer who pays him. It may well be supposed what kind of a board of *control* that is which is dependent for its existence upon those whom they are to control. It must resolve itself, as was probably intended, into a mere *whistle-blowing committee, to cheat the public by standing between banks which employ the "board of control."*

This "board of control" is to furnish the circulation when 10 per cent. of the required amount shall be deposited in *money* or stocks. Here again *money* means "Eastern kites." If a bank wants \$10,000 circulation, it sends the requisition to its agent, accompanied by a draft on New-York for \$1,000. This by the law is "gold and silver coin on hand." If the board of control have not sense to see it in that light, the banks will appoint those that have in their places.

The stockholders of these banks are not to borrow more than one-third of the capital directly, and one-sixth as endorsers, making one-half. That is, two stockholders owning \$3,000 each, may have a discount of \$1,000 as makers each, and \$1,000 more between them as mutual endorsers. This is indeed an improvement, because some directors have been known to borrow more than the whole.

The affairs of the Bank of Wooster, recently failed, afford a good illustration of the manner of organizing these concerns. Mr. J. S. Lake was formerly canal commissioner, and became the largest stockholder in the Bank of Wooster, an institution never in good repute, and which was on the point of failing three years ago, together with the Norwalk and Sandusky banks, in connection with the exploded bubble, called the Bank of St. Clair, Michigan. The capital of the Wooster Bank was \$249,450; of that there stood in Mr. Lake's name \$171,900. Mr. Lake then moved to New-York, and commenced business as a broker, under the firm of J. S. Lake & Co., in Wall-street. The Co. was his son-in-law, O. Klemm, who was doing business in Cleveland, under the firm of O. Klemm & Co., the Co. being J. S. Lake, in New-York. Klemm was also cashier of the bank. These gentlemen performed all the business of the bank, that is to say, Mr. Klemm purchased with its means eastern drafts, and sent them to Lake for collection. Lake making his returns occasionally, the other directors knowing but little of the transactions. The amount of funds in the hands of these gentlemen were as follows:

Bills of exchange, with J. S. Lake & Co	\$89,759	
" " O. Klemm & Lake.....	50,428	
State stocks, with O. Klemm & Lake.....	57,665	
Other assets " "	342,188	
Total with Lake & Co.....		\$540,000
In bank, specie and notes of other banks.....	\$92,560	
Real estate.....	19,244	
Total in Bank.....	116,925	\$228,729
Total assets.....		\$768,729
Circulation.....	\$462,228	
Deposits.....	30,175	\$492,403
Capital, &c.....		\$276,326

With this large amount of the means derived from the Wooster Bank, Lake & Co. speculated in produce, on which they acknowledge a loss of \$150,000, and they started three other Ohio banks, besides buying the Mineral Bank of Maryland and a bank in Texas. The last returns of the three Ohio banks, were as follows:

	Discounts.	Specie.	Circulation.	Deposits.
Canal Bank, Cleveland	\$76,512	15,026	51,678	40,439
Bank of Akron.....	247,238	63,373	200,000	56,526
" Toledo.....	322,506	65,741	222,500	59,961
Total.....	\$646,256	144,140	474,178	156,926

The Canal Bank is an independent bank, and the other two are branches of the State Bank. The law of Ohio requiring the independent banks to deposit with the state treasurer stocks to cover the circulation, and the law calling eastern paper gold and silver, the specie in these returns probably means Lake's paper; we now observe that the foundation of the whole is \$171,900 of stock owned by Lake in the Wooster Bank. It is possible that not a cent of money was ever paid at all, but stock notes given. The Bank of Wooster borrowed, it appears, of the public, mostly of poor people, on small bills, \$492,403, and Lake & Co. held \$540,000 of this money, borrowed of the farmers, through the agency of a bank, or they had \$369,000 out of the bank more than they professed to have put into it. Included in this \$540,000 was \$57,665 Ohio state stock. This was deposited with the state treasurer, as a basis for the Canal Bank of Cleveland, and \$51,678 more notes issued to the public for it. With the other funds the Akron branch and the Toledo branch were started, and \$422,500 more notes issued to the public, besides the issues of the Texas and Mineral Bank. Here, then, Lake & Co. had borrowed of the public on small notes through four banking machines, one laying the foundation of the other, \$936,398. For these issues they obtained large quantities of produce of the farmers, on which they met with disastrous losses, and the notes cannot now be redeemed. We have thus entered into details in order to illustrate the whole operation of this bubble banking.

Now, there is nothing whatever in this Ohio State Bank system to prevent the enactment of the same scenes which in 1838-'39 were presented under the wild-cat system of Michigan. It is the most absurd piece of charlatantry with which a community were ever insulted. A bank may go into operation on \$30,000 of "kites," with a nominal capital not less than \$100,000, and when 60 per cent. is paid in the "board of control," its own paid agent may release it from paying in the remainder. It may then proceed to push out its promises to any extent, and in active competition with other issues. There are now *five* of these banks *owned* by one money broker in Wall-street, New-York.

This State Bank is composed of branches, the progress of which has been as follows:

OHIO STATE BANK.

	No. branches.	Capital.	Circulation.	Specie.	Loans.
Feb. 1846.....	16.....	998,374.....	1,383,066.....	470,642.....	2,000,464
May. 1846.....	16.....	998,374.....	1,822,435.....	618,049.....	2,423,779
Nov. 1846.....	17.....	1,496,757.....	2,655,346.....	819,820.....	3,254,146
May. 1847.....	22.....	2,070,743.....	3,678,981.....	1,080,467.....	4,812,772
Nov. 1847.....	28.....	2,657,567.....	4,674,075.....	1,522,902.....	5,717,251
Aug. 1848.....	37.....	3,302,090.....	5,633,322.....	1,994,937.....	7,921,933

The "board of control" or "State Bank," it app

composed of 37 delegates sitting at Columbus, each appointed and paid by the bank he "controls;" and the less he "controls" them the greater number of votes he has. For instance, the Akron bank, in Feb., 1846, circulated \$22,306 notes, and its delegate had one vote. Under the operations of Lake & Co. the bank raised its issues to \$200,000, Feb., 1848, and the same delegate had, in consequence, four votes. This increase of his influence at the board did not induce him to "control" the source whence it issued. Such is the bubble which has been supposed a check upon banking abuse in Ohio.

All these operations are called "furnishing a currency," and in some quarters the practice is defended on the ground that it is "free trade in banking," and that legislative interference will not remedy the matter. Now, the general principle so advanced is a correct one, viz. : that these things should be left to regulate themselves. But the application of the principle in relation to these banks is unsound, inasmuch as that they have their origin in "regulation." The state undertakes to endorse, as circulating money, the promises of an individual who will deposit stock with the comptroller. This elevates the character of, and gives currency to, the promises of an individual who, left entirely to himself to be "regulated" by the "laws of trade," could obtain no general circulation for his promises any more than the possessor of any other property. These promises are then used solely and simply for the use and behoof of the individual at the expense of the public. This is not free trade in banking; it is simply giving an annuity to an individual. The laws of nature and of trade are those only which should be trusted with the "furnishing of a currency." Mankind, by a common consent, have adopted gold and silver as currency. By a singularly wise provision of Providence, the quantity of these metals furnished from the mine, being governed by the value of labor, keeps pace precisely with the wants of the world. Each nation obtains its share according to the enterprise and industry of its citizens. The quantity brought into a nation by its industry and commerce, always suffices for its wants, and its government affixes simply a stamp upon it to designate the uniform quantity of the metals in each piece. Having done this, "the currency is furnished." The wants of commerce are then supplied by the notes and bills of individuals in good credit, based on actual transactions, circulating within the immediate sphere of the transactions on which they are based, and within which the makers of the notes and bills are generally personally known to those who are called upon to take them. These bills and notes constitute the real currency of commerce, and should be left entirely free. The state legislature then, in their wisdom, undertake to create another species of currency, having no relation to trade, not being the result of industry, and in no way forwarding the general welfare. This they do, by authorizing an individual to buy stock for his own emolument and enjoyment, on the credit of false moneys issued by him, and to which the state fixes the stamp of *legality*, in order to give them a currency they would otherwise no possess.

Art. II.—SUGAR MANUFACTURE.

MEANS RESORTED TO TO EXTRACT THE JUICE FROM THE CANE.—SUGAR-MILL.—QUANTITY OF JUICE OBTAINED UNCERTAIN.—HYDRAULIC PRESS.—SLICING AND DRYING OF THE CANES.—MICHIEL'S PROCESS.—RESULTS OBTAINED BY MILL INCREASED BY CARE AND ATTENTION.—FIVE-ROLLER MILLS.—FOUR-ROLLER MILLS.—WANT OF ECONOMY IN THE EMPLOYMENT OF MEGASS AS FUEL.—MOTIVE POWERS APPLIED TO SUGAR-MILLS.—DEFECTIVE CANE-JUICE.—ITS IMPERFECTIONS.—FILTRATION.*

THE period of the year has arrived when the canes are to be cut, and their saccharine fluid expressed, that it may be converted into sugar. The preceding efforts of the planter are now to be tested; they are about to assume that form by which their value is to be estimated, and on the quantity and quality of which his profit or loss for the year will depend.

That it is the interest of the planter to obtain the largest possible amount of sugar from the canes appears to be so obvious, that we can scarcely suppose that a doubt could be expressed respecting it.

But does the planter of the present day so consider it? Does he believe that the object for which the canes have been cultivated at so enormous an expense, is that of obtaining sugar from them exclusively?—or has he overcome so many difficulties in bringing them to maturity, that he may employ them for some other and ulterior purpose? These questions will be answered presently.

I must, however, at once declare that his sole consideration, after having obtained the canes in the most perfect condition that circumstances have permitted, ought to be the means to which he should resort for extracting their saccharine constituents in the greatest abundance, and in the greatest purity.

The fluid contents of a cane form 90 per cent. in weight of the entire structure of the stem; they consist of water, holding in solution a large quantity of crystallizable sugar, and a small amount of other substances, the presence of which would prove highly injurious if not removed shortly after the vitality of the plant has ceased. The remaining ten parts constitute the woody tissues of this portion of the plant.

It has likewise been shown, that it is highly probable, if not certain, that during the life of the cane the various substances which enter into the composition of its juice are never found mingled together, but that sugar and water alone form the contents of the cells, whilst the others are found in solution in the sap vessels exclusively.

The anatomy of the sugar-cane teaches us, that to obtain these two fluids separately, is altogether impracticable; nevertheless, we

* Continued from August and September Nos.

may inquire whether the *whole of the sugar* can or cannot be obtained in a state, more or less free from an admixture with the other substances, by means which are applicable to the manufactory, as we have seen that it can be effected in the laboratory of the chemist.

The means at present resorted to, or which have been proposed for adoption, to extract the saccharine matter from the cane, are the following :—

1st. The Sugar Mill. This is the mode universally employed in all the colonies for extracting the saccharine constituents of the cane. The construction of the mill is too well known to require description. It may be sufficient to say, that it consists essentially of three rollers, which are placed sometimes in a horizontal, and sometimes in a vertical direction.

The canes are submitted to the action of these rollers; and, in consequence of the great pressure and squeezing which they undergo, the whole of their tissues are completely broken up and lacerated. The degree of pressure is always so managed, however, that each cane shall, as far as possible, be drawn from between the rollers, preserving its entire length, so that it may the better serve the purpose for which it is ultimately destined, namely, that of fuel, by the exclusive means of which the sugar of the following year is to be manufactured.

Cane-juice, thus obtained, must necessarily be a very heterogeneous fluid, comprising not merely a varying amount of all the soluble substances which enter into the formation of the plant, but also of much solid and insoluble matter likewise. The latter consists, for the most part, of cellulose and woody fibre, of earthly particles which have adhered to the cane, of green coloring matter, &c., and which are easily separable by filtration.

We possess no information by which we can ascertain the precise amount of the fluid thus obtained from 100 lbs. of canes in the British sugar-growing colonies. I have questioned many planters upon the subject, but always without success; and my own observations have been too limited in their extent to deserve much weight as an authority.

Fortunately, we have other sources of information which, by enabling us to learn the results obtained in foreign but neighboring colonies, furnish us with data for arriving at a knowledge of those obtained in our own.

Three or four years ago, M. Duprez, pharmacien in the French marine, was sent by his government on a special mission to Guadeloupe, for the purpose of making a series of experiments on the composition of the sugar-cane. This gentleman, attaching a just importance to the quantity of cane-juice which is ordinarily obtained from the canes, details a number of experiments which he performed on this point on various estates throughout the island. The weight of canes in each trial varied from 200 lbs. to 12,000 lbs., and the average amount of juice furnished by 100 lbs., crushed in the different mills, was as follows :—

1. By mills having horizontal rollers ; the motive power not stated,.....	61·2 lbs.
2. By mills ; motive power, steam,.....	60·9
3. By mills ; motive powers, wind and steam,.....	59·3
4. By mills having vertical rollers,.....	59·2
5. By mills ; motive power, cattle,.....	58·5
6. By mills ; motive powers, wind,.....	56·4

He further states, that although the quantity of cane-juice varied 68·5 to 54 per cent., the average of his experiments was 56 per cent. only.

M. Avequin gives 50 per cent. as a general average of the juice expressed from canes in Louisiana, while M. Senez states that he only obtained 36 per cent. of cane-juice, by means of a mill worked by steam. M. Paul Daubrée, in a pamphlet, the translation of which, by Mr. Thompson, of Jamaica, is, I believe, generally known among planters, considers 50 per cent. as a full average expressed by the mills throughout the Island of Martinique. The lowest amount that my own observation in the West Indies permits me to give, is 47 per cent., and the highest, 61 per cent. ; but, as I have just mentioned, it has been too limited to be offered as an authority. In the Island of Madeira, I obtained at two different times by the same mill, and from canes of similar character and quality, 47·5 and 70·2 per cent. of juice. The mill was a small one, made at Aberdeen about two years previously, on the ordinary principle, with horizontal rollers, and the motive power was cattle. During the experiment, which furnished the last and largest result, the rollers were braced more than usually tight, and the number of canes introduced at a time were five or six, being the utmost that the strength of the cattle would admit of. The canes were squeezed once only ; indeed, the megass was too much lacerated to admit of its being passed between the rollers a second time with advantage.

There is a considerable difference, as we may perceive, in the results given above, but this difference does not excite so much surprise as the comparatively small proportions of cane-juice, which appear to be obtained as a general average in those countries in which this matter has been investigated.

How far these results correspond with those which would be obtained by a general and strict inquiry being established throughout the British colonies, it would be idle even to surmise ; but there is every reason to believe, that the comparison would prove an unfavorable one to the latter. Many reasons lead me to believe :—1. Because we can scarcely expect to find superiority, or even equality, where no attempts have been made to obtain it. 2. That when we are ignorant that a deficiency exists, little pains will be bestowed to correct it. 3. When, from the force of circumstances, more attention is paid to the obtaining of an abundant supply of megass, to serve as fuel for the concentration of the cane-juice of the following year, than I, at least, have ever seen evinced for obtaining a full and adequate supply of juice for the present.

Let it not be supposed from the above remarks, that I consider that the French planter possesses a more extended knowledge of his

art, greater acquirements, or more industry than his English *confrère*. I should be sadly unjust towards my countrymen by such an insinuation. I have had opportunities of appreciating the qualities of both, and unhesitatingly acknowledge, as a general rule, that both as agriculturists and sugar-boilers, the latter are superior. But this admission does not invalidate what I have just stated; for, attention having been drawn to this subject in the French colonies in a very remarkable degree, it has received far more consideration there than it has in our own possessions.

The due and efficient expression of the juice from the cane is a subject of the very highest importance, for it is evident, that upon this cause alone may depend the fortune or the ruin of a proprietor of a sugar plantation.

2. *The hydraulic press* has been proposed as a substitute for the mill, and as a better means of expressing the cane-juice. It has been introduced into Jamaica and St. Vincents, but with what success I am unacquainted. I know not whether it has ever been submitted to a fair trial, and the results obtained by it compared with those obtained by the mill.

Unfortunately, there is no organised system as yet established among the colonies, by which the knowledge and experience of one may be diffused among the many. From the want of the means of reciprocal communication, repeated and well ascertained failures of a scheme, which have caused its rejection in one colony, do not prevent frequent and renewed trials of it in others. Or, if it has proved successful, ignorance of its success, aided most probably by a scepticism which has been rendered obstinate from witnessing repeated failures, causes a long period to elapse before its reception becomes general. Thus it may have been with the hydraulic press. May not its more general employment have aborted for some similar reason?

3. It was proposed a few years ago to cut the canes into thin slices, which were to be dried, either in the sun or by means of artificial heat, and then forwarded to Europe for the purposes of manufacture. This scheme was tried in Guadaloupe, and, as might be imagined, failed. Decomposition of the canes commenced on board ship, and on arrival in France, the whole of their sugar was destroyed. Moreover, if they had arrived in a perfectly sound state, the trouble and expense attending the operation of slicing and drying, coupled with the additional freight, render it questionable whether the scheme would have been remunerative.

4. A few months ago, a patent was taken out for the French and British colonies, by M. Michiel, for extracting the sugar from the cane by an entirely new process. It consists in cutting the canes into extremely thin slices, and then submitting them to the action of a mixture of lime and water, which, it is presumed, will coagulate, and render insoluble the whole of their nitrogenized constituents; thus permitting the extraction of the whole of the sugar with the soluble salts by means of water.

Were this process as practicable as its admirers seem to think, it

ought, unquestionably, to be universally adopted; for I believe that were it skilfully carried out, almost the whole of the saccharine matter in the cane would to a certainty be extracted. It remains, however, to be seen whether it is really so practicable, or whether its application will be sufficiently cheap. I much fear that the circular knives, by which the canes are to be sliced, if we may judge from what occurs in the slicing of the beet-root, will be subject to continual derangement, and their edges blunted by the silicious coating of the cane. It may be doubted whether the operation will prove a sufficiently speedy one to admit of its adoption on large estates. The amount of evaporation demanded would also be great. This, it is true, may be obviated by placing the canes thus sliced, in a succession of boxes having perforated bottoms, and placed one over the other in such a manner, that boiling water poured into the upper one will gradually percolate through each of the subjacent ones, and thus, by robbing the canes successively of the greater portion of their sugar, the saccharine liquid will become gradually more inspissated as it descends, until, when it comes away from the lowest box, it will have assumed the state of a syrup of considerable density.

I offer the above remarks, frankly, because I think that this scheme presents much that is admirable; nevertheless, like many others, it requires the touchstone of experience.

After all, it must be admitted, that at the present time, the only means which have been sufficiently tested to give us the confidence we have a right to demand, for obtaining the saccharine fluid from the cane, is the mill. We must, therefore, attempt to the utmost of our power to correct, at least in some measure, its present imperfections, or rather the imperfect results obtained by it.

I have shown that from a more tight bracing of the mill, the quantity of cane-juice obtained from 100 lbs. of canes may be augmented from 48 lbs. to 70 lbs.; but it is evident, that to effect this increase, a corresponding augmentation of the motive power will be required.

Our present inquiry is confined to the means to be adopted to render the mills already erected more effective than they are generally found to be. The improvements in their construction, and the application of the most advantageous motive powers, will be considered hereafter.

To render a mill as efficient as possible, the following rules should be attended to:—

1. The rollers should be made to approximate as closely as the work which they have to perform will admit of. In mills, in which the rollers observe a vertical direction, the space between the first and second should scarcely, if at all, exceed $\frac{1}{4}$ of an inch, whilst a distance of $\frac{1}{8}$ of an inch is the most that should be allowed between the second and third. When they are placed horizontally, the upper one ought to observe a space of $\frac{1}{4}$ to $\frac{1}{2}$ of an inch from the two lower. These distances can never, perhaps, be accurately given in every case, but the requisite degree of bracing should always be

strictly attended to. 2. The velocity of the rollers should be rendered as uniform as possible, not by diminishing the amount of the motive power, but by a carefully regulated supply of canes. 3. The canes when thrown upon the feeding-board should be upon the same plane, and never suffered to cross each other, otherwise the motion of the rollers will be checked, and the canes will be submitted to unequal pressure. 4. The megass should invariably be repassed between the rollers, so as to extract, as much possible, the juice which still remains in it.

When the canes are rich, and their juice of considerable density, the megass should be sprinkled with a little water, or, where it is practicable, exposed to the action of steam before it is submitted to the pressure; but when the canes are large, green, and watery, this may be dispensed with.

By following the foregoing rules, the quantity of cane-juice may be increased, at least, 20 per cent.; that is, a mill which ordinarily gives 50 lbs. of juice for every 100 lbs. of canes which are crushed by it, may, by a little attention, be made to increase the quantity to 60 lbs. at least, and the one which now produces 60 lbs. may be made to yield 70 lbs. from a like quantity.

This amelioration may be obtained without any additional outlay of money; a little watchfulness on the part of the planter, to see that his orders are carried out, being all that is required for its accomplishment.

There are, unfortunately, many mills, which, either from age, the want of solidity originally, or from a construction altogether imperfect, produce even an inferior result to those given above. A comparative amelioration will follow the application of these rules in all cases; but the only real amelioration which can be effected in the cases alluded to, is the removal of the old mill and the erection of a new one. The present, it is true, are not the times when sugar properties in the West Indies permit an indiscriminate outlay of capital for the purchase of new machinery. But it must be remembered, that the difference between 45 or 50 lbs. and 70 lbs. of juice, extracted from equal quantities of canes, indicates a corresponding difference in the amount of the crop; while the annual expense attending the cultivation of the estate, would be in both cases the same. If the erection of another mill be decided upon, we may inquire into the principles that should guide us in its selection.

One evil attending the mill composed of three horizontal rollers, is the re-absorption of a part of the cane-juice by the squeezed, but spongy megass. Another and much greater one, is the loss of power caused by the oblique direction of the crushing force, and the inordinate amount of friction.

Mills have been within the last few years manufactured with five rollers, which are placed with regard to each other, in the same manner as are the three rollers in the usual horizontal mills—that is, two are placed above and three below. Mills thus constructed, have been successfully used in Cuba, Bourbon and the Mauritius, 70 per cent. of juice having been obtained by them at one operation, with-

out much greater laceration of the megass than is usually produced by the three-roller mill. But, as might be foreseen, a great objection has been raised against them, owing to the very considerable increase of motive power which they require.

Latterly, sugar-mills have been constructed with four rollers, which are placed two below, and the other two above, and immediately over the former. These mills have been greatly extolled, producing, as it is said, from 70 to 75 lbs. of juice from 100 lbs. of canes, with a motive power little, if any, greater than that which is required by an ordinary three-roller mill of equal size. I have not seen mills of this construction in operation, but I believe that the advantages, which they are said to possess, have not been exaggerated.

That, by any mechanical means, the whole of the juice will ever be extracted from the cane, cannot be expected; indeed, from obvious physical causes, this result would be impossible; but it is certain, that the quantity at present obtained, 50 lbs., may very readily be increased to 70 or 75 lbs. from 100 lbs. of canes.

It is evident, that in recommending the effective squeezing of the canes, the preservation of the megass has been regarded as a very secondary consideration.

No doubt it would be exceedingly agreeable were we able to extract the entire amount of juice from the canes, and yet find in the remaining 10 per cent. of woody fibre, &c., a sufficiency of fuel to evaporate an equal amount of cane-juice during the ensuing crop. Unfortunately, we cannot have our cake and eat it too. The question to be decided is very simple, namely, whether all our labors have been expended in raising canes for fuel, or for the manufacture of sugar.

The absolute quantity of wood contained in the stem of a sugarcane is 10 per cent. of its weight. The only other constituent which, when the cane is carefully exsiccated, may likewise serve as fuel, is the sugar, and this may be considered as amounting to seventeen parts per cent. The quantity of water will then be about seventy-two parts in one hundred. These proportions are subject to variations from many causes; but they are sufficiently stable to illustrate what I wish to point out, namely, that the amount of combustible substances contained in the cane is to the water as 27 to 72.

The extent of evaporation that can be effected by the combustion of sugar, has not, I believe, been ascertained in this part of the world; it is only in the colonies that the extensive use of this substance as an article of fuel is ever heard of. Let us, however, suppose that the mixture of sugar and wood, such as exists in a carefully dried cane, equals, in this respect, coal; and that when it is employed in the unskilful and wasteful manner at present practised with the megass, it is capable of evaporating five times its weight of water. It will follow that the fuel obtained from 100 lbs. of dried canes is equal to effect the evaporation of 135 lbs. of water, or in other words, that it will be able to inspissate the whole of the cane juice contained in 200 lbs. of canes, to the state of a strongly granulated syrup.

Fifty pounds of megass (if carefully dried and preserved with the greatest care) obtained by the expression of an equal weight of juice from 100 lbs. of canes, would, by a similar calculation, contain ten pounds of wood and $\frac{4}{5}$ of 17 lbs. of sugar = to about $17\frac{1}{2}$ lbs. of fuel, capable of evaporating $87\frac{1}{2}$ lbs. of water, or, of reducing to perfect dryness, the whole of the juice contained in 121 lbs. of canes.

Unfortunately, it is found in practice impossible to dry the megass in such a manner as to preserve within it the quantity of combustible materials given above. For whether it be stacked at once, or be previously exposed for some hours to the rays of the sun, fermentation of the juice retained in it commences, and the sugar is converted into incombustible bodies, as gum, lactic acid, &c., or, into others, which are rapidly evolved, as carbonic acid and alcohol; so that when the time arrives when its use as fuel is required, little more remains available for the purpose than the woody fibre; that is to say, that instead of obtaining $17\frac{1}{2}$ of fuel from canes which have given 50 parts in 100 of juice, 10 parts only are actually serviceable; and the amount of evaporation which could be effected by this quantity, would be equal to 50 lbs. of water only.

The planter would appear to be in a great measure aware of this fact, by offering as a reason for the imperfect pressure to which he submits the canes, the fear of having a larger evaporation to effect than his fuel is capable of accomplishing. When he states, however, that by imperfect pressure he is thereby obtaining a proportionately increased supply of fuel for the following year, he is manifestly in error, for the only constituent of the cane on which he can rely for that purpose, is the woody fibre, which will be equally abundant to whatever extent the pressure may have been carried.

To exemplify the loss which a sugar plantation annually sustains from an adherence to this most shamefully extravagant system, I will suppose, that by increased pressure the amount of cane-juice obtained is augmented merely from 50 lbs. to 60 lbs. in every 100 lbs. of canes. It is clear that the amount of sugar, molasses, and rum, must be increased in the same proportion, and, therefore, an estate, which otherwise would give 200 tons as its annual product of sugar, would, from this cause alone, afford 240 tons.

Let us also suppose, that there being no other available fuel at hand in place of the megass, coals have to be imported from England, at an expense of 1*l.* per ton, and that 240 tons would be required to evaporate the requisite quantity of cane-juice to make the same number of tons of sugar; the price of the coals would represent the expense attending the augmentation of the produce. The sugar would be worth at least 20*l.* per ton, consequently, the clear gain would be 300*l.* less 240*l.*, or 60*l.*

The profit, however, would not be confined to the mere increase of sixty tons of sugar; the megass, after due fermentation, would produce an amount of farm-yard manure, which, when thrown upon the land, would augment the quantity of canes for the ensuing crop, at least 50 per cent., and, in the greater number of colonies, very much more. In Barbadoes, for instance, there are many estates that

after a good supply of manure, readily yield, in favorable seasons, three tons of sugar per acre, which, without that assistance, would not yield one.

But, admitting that a planter may not choose to employ his megass in that manner, it is still available for the purpose of fuel, for its woody tissues remain in all their integrity; and, probably, by its employment, the quantity of coals required would be reduced to less than half the quantity given above.

I cannot, however, leave this subject without again entreating every proprietor of sugar estates in the West Indies, to give it his most serious consideration. If, as I believe, the average quantity of juice expressed from the canes in those colonies does not exceed 50 per cent., and, if by a moderate share of attention, it may be increased to 70 per cent. by means already possessed by the great majority of estates, it is evident that the augmentation of the produce that would follow the adoption of a careful and economical system of expression, would be equal to 40 per cent., and that the only additional outlay which would accompany it would be the cost of the material employed for fuel. If we take 30 tons as the weight of plant canes grown on one acre of land, and if we suppose, that by a judicious pressure, 70 per cent. of juice has been obtained from them = 21 tons, we shall possess nine tons of megass available as a manure. We will also admit, that three tons of coals would be required to concentrate this quantity of cane-juice to a crystallizable syrup, and that their cost would be 3*l*. This must be placed against the nine tons of manure, the value of which would be, at least, 4*l*. 10*s*., or 10*s*. per ton; consequently, the value of the megass, employed as manure, would be 50 per cent. greater than it is when used as a material for fuel; and the increased saving to the estate would observe the same proportion.

MOTIVE POWERS APPLIED TO SUGAR-MILLS.

The motive powers attached to the sugar-mills in all the colonies, consist of cattle, wind, water and steam. Whatever be the power, it is essential that it should be sufficient for the purposes which it has to perform; and that it should be at all times available. When these requisites have been obtained, we may then study, what is generally so much talked about in the colonies, economy, a term, however, which is often most egregiously misunderstood.

Cattle-mills are still very generally seen in many of the colonies. The animals usually employed are mules. From their great cost, from the number required to perform the work, from the mortality to which they are subject, and from the additional labor which their care, food, &c., entails, this kind of power is very expensive. The only advantage that I have ever heard attributed to it, is the manure which its employment furnishes. Manure must, indeed, be much wanted, and its value must be great under such circumstances; for the droppings of animals so lean and ill fed, as those poor creatures too often are, are almost worthless for such a purpose, being scarcely better than the herbs that they have fed upon.

Wind is frequently employed as a motive power, and, in Barbadoes, it may be said to be almost the only one. It offers, at least at first sight, economy as a recommendation, which, without doubt, is a very considerable one. The trade-wind, which sweeps across the tropical portions of the Atlantic Ocean, particularly during the period of the year when the sugar crop is going forward, constitutes a force sufficiently powerful for the ordinary wants of the mill. But even there it does not altogether lose the character of fickleness so commonly attributed to winds in general; so that it not unfrequently happens, that the crop is retarded until the juice of the canes has much deteriorated, by the setting in of the rains, probably at a period unusually early, from the want of a sufficient amount of motive power. I think, that where this power is used, it ought always to be accompanied by a small high-pressure steam-engine, as an auxiliary when circumstances may require it.

Water, where it is sufficiently abundant, and where the supply can be always depended upon, is, unquestionably, the power best suited to the circumstances in which the West Indies are placed. It is as economical as wind, it is more powerful as generally applied; it is very manageable, and its force is easily regulated; and, at the same time, it is unaccompanied with the same uncertainty. Unfortunately, few estates are so situated as to admit of the application of this power.

Steam is a power that is universally applicable, and its employment, consequently, is becoming daily more general. Its advantages are indisputable; but it would be impossible to discuss in this place a subject so extensive. The steam-engine best suited for the purpose we are inquiring into, is that which is denominated the *high-pressure engine*. As at present constructed, this kind of engine may be used without fear of accident. Its cost is small; it is easily managed and kept in repair, and its economy, both in fuel and water, is considerable.

The juice having been expressed from the canes, its defecation, or, as it is usually called, clarification, ought immediately to be proceeded with.

In many colonies this operation is dispensed with. When it is performed, the process is as follows:—

For the most part the cane-juice, as it comes from the mill, is received into a cistern capable of holding 500 or 600 gallons or more, in which it is permitted to remain until the clarifiers, or one of them, is ready to admit it. These cisterns, or cold receivers, as they are called, are made of copper occasionally, but, generally, they are merely wooden boxes, lined with sheet lead. The use is very properly becoming less frequent daily.

Where the cold receiver is not in use, the cane-juice passes from the mill directly into one of the clarifiers, which are shallow copper pans of a circular form, almost flat, or rather arched slightly upwards at bottom, and capable of holding from 250 to 500 gallons each. Each is hung over a separate fireplace, which is supplied with a

damper to regulate the combustion of the fuel, or for checking it altogether when required.

When the clarifier is nearly filled, heat is applied, and on the cane-juice attaining a temperature which varies according to the fancy of the person who has charge of the operation, but which is usually about 110° , a portion of lime is added, either in its caustic state, or in that of a hydrate, or, as it is called, *slaked*. Usually the lime is slaked by means of water, and it is then made to form a milky or creamy-looking fluid; but occasionally this effect is produced by the addition of clarified cane-juice, or of syrup taken from one of the coppers. The latter plan has its admirers; for the lime, when thus treated, having entered into combination with a due proportion of sugar, its combination with the sugar of the cane-juice, it is thought, is less likely to take place.

In which way soever employed, the quantity requisite to perform the desired effect is a point on which few sugar-boilers agree; they all admit, however, that it varies according to the quality of the cane-juice.

To ascertain with greater accuracy the amount of lime required, it is customary in many boiling-houses to fill three or four wine-glasses with cane-juice drawn from the clarifiers, and to drop into each successively increased quantities of lime-water; the one which produces the most favorable result being taken as the indication of the quantity demanded.

On the addition of the lime, the cane-juice is freely stirred, so that the two bodies may be intimately blended together. The heat is cautiously increased until it approaches the boiling point, and until a thick scum forms upon the surface, which cracks and separates into two or three pieces, allowing the clear liquor to be seen between them.

The fire is then extinguished, and the cane-juice is suffered to remain undisturbed until the remaining feculencies have subsided. When this is supposed to have taken place, the cock of the clarifier is turned, and the clarified juice passes immediately into the grand copper.

Cane-juice defecated in this manner is generally transparent—of a yellow color, occasionally approaching to orange; it may be alkaline or neutral, or slightly acid, according to circumstances. On attentive examination, minute flocculent particles may always be discovered in it, either by the naked eye, or with the assistance of a common lens.

One or two planters of my acquaintance are in the habit of submitting the cane-juice to a double clarification; the first by means of heat alone, the second with heat and lime combined.

The above is the plan usually pursued in performing one of the most important operations in the whole process of sugar-making; although in many respects the object to be attained by it is but imperfectly accomplished, nevertheless, very considerable benefit is at all times derived from it.

By defecation, our purpose is to remove as much as possi-

the cane-juice all those substances which are likely to injure the quality of the sugar by their mechanical mixture with it; or those, the presence of which would, if long continued, inevitably produce some chemical change in its saccharine principle, and thereby either diminish the quantity of sugar which ought to be obtained, injure its quality, or produce both these results.

Those substances are, as before stated:—1st. Insoluble impurities, consisting of small particles of earthy matter, bruised pieces of cane, chlorophylle, &c. 2d. The proteine compounds, albumen and caseine. 3d. Soluble coloring matter. 4th. Salts. We possess no means of getting rid of the last mentioned, as I have before had occasion to state.

The separation of the first, or insoluble impurities, can be effected by means purely mechanical. In the West Indies these matters are permitted to run into the clarifiers, as we know, and are separated only subsequently to the application of heat. But this plan always entails a loss of cane-juice, which is retained in a considerable quantity in the bulky scum at the top and the thick sediment at the bottom. This loss may be prevented, and a better defecation obtained, by submitting the cane-juice to a coarse straining, rather than a filtration, previously to its going into the clarifier.

Filtration of the cane-juice, antecedent to its passage into the clarifier, has been repeatedly practised, and discontinued, in consequence of its either being too tedious an operation, or from the difficulties which have attended it. The object of filtration at this early stage, it should be remembered, is merely to separate the coarser insoluble particles suspended in the cane-juice. It must be performed so rapidly that the means employed shall offer no impediment to the free transmission of the passage of the liquid, or add to the risk of decomposition ensuing. For this purpose a large double-bottomed sieve should be suspended over each clarifier, the meshes of which should be formed of metal wire $\frac{1}{2}$ of an inch apart in the upper one, and $\frac{1}{3}$ of an inch in the one below. When the sieve is foul, after each filtration, the upper bottom must be removed, and the adhering impurities washed out.

The removal of the proteine compounds, albumen and caseine, and the soluble coloring matter, cannot be effected so easily; for this purpose we must call in the assistance of chemistry. The only chemical agents at present employed are heat and lime.

The first coagulates, and renders insoluble the vegetable albumen which at the same time envelopes and entangles a large quantity of the flocculent particles suspended in the liquid, and thus assists considerably their separation, in the same way as the white of an egg, or the serum of the blood, when added to liquids that it is wished to clarify. Heat, alone, however, is insufficient to produce those effects upon cane-juice which are understood by the term defecation. Syrups obtained from cane-juice thus treated would show little disposition to granulate, while they would have a strong tendency to decompose. Experience has shown this to be the case; therefore, *from time immemorial*, the application of heat has been assisted by

the addition of lime, or an alkali obtained by the incineration of some favorite vegetables. Both soda and potash, either in their caustic states, or as carbonates, defecate cane-juice equally as well as lime; but the great injury that their presence would inflict upon the sugar and molasses, renders them inadmissible for this purpose.

The action produced by caustic or recently slaked lime on cane-juice, is a very complex one; and I believe we are at present far from thoroughly comprehending it. It merits attentive consideration.

When a drop or two of the milk of lime be suffered to fall into a tumbler of cane-juice, the color of the latter is immediately changed from a greyish green to a bright yellow, on the spot where the lime has fallen. This change of color is accompanied by the separation of the liquid into two parts, the one being a solid heavy precipitate, formed by the collecting together of the insoluble impurities; the other, being the cane-juice rendered tolerably clear by the separation of those substances.

Lime saturates any free acid it may meet with in the cane-juice; it sets free a small quantity of potash; it forms an insoluble compound with a portion of the caseine, which is either precipitated, or which rises to the surface in the scum; it combines with three times its weight of sugar—the substance produced being very sparingly soluble in cold, and still less so in hot water; it deepens the color of the juice.

When the cane-juice contains a small quantity of lactic and acetic acids, an event which occurs more frequently now than formerly, owing to the want of a sufficiency of labor to hasten the stages of the manufacture, the lime combines with those acids, and forms un-crystallizable salts, which preserve a portion of the sugar with which they may be in contact in a fluid state.

Should a small quantity of glucose be present in the syrup, which is always the case when concentration has been conducted as it now is in the colonies, the lime, probably assisted by a small quantity of potash which has been set free, speedily converts it into glucic acid; and the glucates, when formed by the prolonged action of the heat, are as quickly converted into melasينات of the same bases, and the whole syrup is thus rendered of a dark brown or black color.

Cane-juice, defecated as judiciously as possible by means of lime and the application of heat, throws down a further precipitate on the addition of a little diacetate of lead.

It might be supposed, that as lime and heat alone are insufficient to produce the entire separation of all injurious substances from the cane-juice, and, as the employment of the former is far from being entirely innocuous, that its use ought to be dispensed with, and that some other substance ought to be substituted for it.

We have seen, that many substances are capable of throwing down caseine from its solution in cane-juice, more or less completely: but the action of some of them is less complete than that of lime; and others are inadmissible, either in consequence of the ulterior injurious effects which would be produced on the sugar from their poisonous qualities. We are therefore compelled

tinue the employment of lime, either alone, or, still better, associated with other substances which promote its powers; and, consequently, enable us to use it in quantities so small, as to remedy many of the evils which result from it as at present administered.

1. *Defecation by means of lime, and subsequent filtration.* The first thing to be attended to, is the quality and method of preparing the lime. This substance ought to be as pure and free from admixture with silicious or other foreign bodies as possible. It should be carefully burnt, and immediately slaked with boiling water, which should be added in such a quantity as to form a mixture of the consistence of cream, and the whole should be strained through a fine wire sieve.

The cane-juice, previously strained as before recommended, having been received into the clarifier, heat is to be applied to it as quickly as possible. In the meantime, its acid reaction should be tested by means of litmus paper, so that we may form an idea of the quantity of lime which will be required. Usually, the acid reaction is slight, but decided; that is, the litmus paper is changed by it from a blue to a reddish purple or purplish red; but cane-juice presents great variations in this respect, and with the amount of variation will depend that of the lime to be added.

The temperature of the liquor in the clarifier having risen to about 130°, a measure of the milk of lime, containing from four to six ounces of pure burnt lime, is to be added, and the whole intimately blended together by means of an oar for a minute. The liquor must be again tested, and, if necessary, an additional quantity of lime must be given to it, until it presents a perfectly neutral reaction; that is, until it neither changes the blue color of the paper to a red, nor that into blue, which has been previously made red by the vapor of vinegar. The heat is to be continued until perfect ebullition has been established for two or three minutes. The cock of the clarifier is then to be turned, and the liquor passed directly into the filters.

Each clarifier is supposed to contain 300 gallons. The filters which may be employed, are either the common bag filters or the charcoal filters, both of which will be explained presently. The latter, however, is an operation uncalled for in this stage of the manufacture of sugar from the sugar-cane, if the defecation has been carefully attended to.

From the filters the liquor should pass directly into the coppers, whenever this can be accomplished. Unfortunately, as the generality of boiling-houses are arranged, this is rarely practicable, in which case it must run into a cistern constructed for the purpose, and be pumped from thence into the pans.

When carefully performed, and the quantity of lime accurately given, this method is a very good one, and answers very well if the cane-juice be good, healthy, and freshly expressed.

When the quantity of lime has not been quite sufficient, so that the liquor has a slightly acid reaction, the color of the sugar will be *light, but the grain small*; on the other hand, if the liquor be slightly

alkaline, the grain of the sugar will, *cæteris paribus*, be bolder, firmer, and larger, but the color will be darker.

Whatever be the kind of vessel employed to perform the above, or any of the succeeding modes of defecation, it is essential that it shall be constructed of copper. The ordinary clarifying pans of the West Indies are all formed of this metal; but some of those which have been latterly introduced, and which have been constructed on the same principles as the blowing up cisterns used by refiners, have been made of, or lined internally, with iron; and I need not say, that they are, in consequence, unfitted for the performance of many of the most successful methods of defecation about to be described.

2d. *Defecation by nutgalls.* To two ounces of nutgalls, finely bruised, add half a gallon of boiling water; infuse for twelve hours, and strain; neutralize, by means of cream of lime, a clarifier of cane-juice containing 400 gallons, and when the temperature is about 150° to 160° , add the infusion of galls; mingle the whole together by means of a ladle or an oar, boil for three or four minutes, and filter through bag filters.

This method may be followed with advantage when the cane-juice is viscid, without increased acidity.

3d. *Defecation with sulphate of zinc.* To a clarifier containing 300 gallons of cane-juice, previously deprived of its insoluble impurities by straining, add, as soon as possible, twelve ounces of sulphate of zinc; apply heat, and when the temperature has risen to 150° , add as much milk of lime as will render the liquid neutral, or, in the slightest degree, alkaline; boil for two or three minutes, and filter through bag filters.

There are few substances which defecate better than sulphate of zinc, employed in this manner. But it must be remembered, that this substance is poisonous, and, whenever used, it is absolutely necessary to filter the liquor through bag filters, which retain the sulphate of lime and insoluble oxide of zinc, in combination with the organic matters that have been acted upon; while the defecated liquor passes through free from any deleterious admixture.

4th. *Defecation by means of alum.* Dissolve four pounds of common alum in a sufficient quantity of pure water, and when the cane-juice in the clarifier (350 gallons) is just beginning to get warm, pour it in and mix well with an oar or ladle. The cane-juice will now have a strong acid reaction, and the heat must be quickened, as much as possible, to 140° , so that neutralization may be effected by the addition of milk of lime, added in repeated doses, until the litmus paper is no longer altered. Boil and filter as before.

Common alum is a combination of sulphuric acid, alumina, and potash. In the above operation, the lime has set free the alumina, which immediately combines with the coloring matter; and the free lime and sulphate of lime, produced by the decomposition which has taken place, precipitate almost entirely the other organic substances of the cane-juice, leaving the sugar unaltered. We could, therefore, desire no better means of accomplishing our object, were it not that the sulphate of potash is retained in solution in the cane-

- juice, and its operation on the syrup and sugar, ultimately obtained, would be injurious.

5. *Defecation by means of the sulphate of alumina.* This substance is employed in the way just described for alum. It does not contain potash, but is composed of alumina and sulphuric acid only. The proportions required are about one pound to every 100 gallons of juice; but twice, or even thrice that quantity, may be given with advantage. We must be careful, however, to neutralize the liquor, thus treated, as quickly as possible with milk of lime, otherwise some risk would be incurred of converting a portion of the sugar into glucose. Every pound of the sulphate of alumina will require about seven or eight ounces of caustic lime to effect its decomposition; but a slightly additional quantity may be given in all cases, beyond what is merely necessary, although the liquor may thereby be rendered slightly alkaline.

I can conceive no better method of defecating cane-juice than this. The liquor as it comes from the filter is almost colorless; and all the after processes to which it is submitted are extremely satisfactory. I have produced sugar from cane-juice thus acted upon, equal in color to the finest clayed Havannah, and possessing a sharp and sparkling grain.

Unluckily, the sulphate of alumina is not an article of commerce in this country, owing to there being no demand in it. It can, however, be obtained from France, where it is used in the manufacture of beet-root sugar. We possess by the decomposition produced, three defecating substances of considerable power; namely, the alumina, the sulphate of lime, and the free lime which has been added in excess.

The application of this plan is attended with little expense, and no trouble; and the results obtained are, as I have just stated, such as to recommend it for general adoption.

6. *Defecation with the sulphates of alumina and zinc.* A combination of these two substances may occasionally be employed, I think, with some benefit. A few experiments induce me to advise a trial of the plan, if merely to ascertain in what respect the results obtained differ from those of the last. The proportions used by me have been, one pound of the sulphate of alumina, and two ounces of the sulphate of zinc, to 100 gallons of juice. The way of proceeding is exactly as above, and the lime must be added as indicated by litmus paper.

7. *Defecation by means of alumina and sulphate of lime.* This method is one which has been pursued with some advantage by refiners, both in this country and in France. Two pounds of common alum are to be dissolved in about two gallons of water, either in a wooden or earthenware vessel; purified chalk, which is a carbonate of lime, is slowly to be added, and the two intimately mixed together. When all effervescence is over, and does not recommence on the addition of a little more chalk, the decomposition is complete. The mixture is allowed to stand until the alumina and sulphate of lime have subsided. The supernatant water holding the sulphate of potash

in solution, is poured off, and other water added; and this must be repeated until all taste of the sulphate of potash has disappeared. The mixture is then to be thrown into the clarifier, and intimately mixed with the cane-juice when lukewarm; the above quantity being added to every 100 gallons. Lime must be used to neutralize the cane-juice when the temperature has reached 150° . The whole must be boiled for a few minutes and filtered as before.

8. *Defecation by sulphuric acid.* About two fluid ounces of sulphuric acid, diluted in thirty times its bulk of water, is thrown into 300 gallons of cane-juice, at a temperature of 120° , and the whole well stirred together. In about three or four minutes, four ounces of lime, prepared as directed, are to be added, and the stirring continued until the temperature reaches 170° . More lime is then to be added until the liquid is perfectly neutral. It must boil for a few moments, then be filtered.

At the first sight this would appear to be a most unskilful and injurious way of treating cane-juice. The action of the sulphuric acid, if long continued, would convert the whole of the sugar into glucose; and it is not improbable that this effect is produced to a very small extent, even in the short time that the two are in contact. The injury, however, is less than, under the circumstances, might be supposed.

But it is not on healthy cane-juice that this method of defecation should be employed; for the results obtained by the others are, in such cases, very much superior, whilst they are unaccompanied by any mischievous consequences. There are, however, certain states, in which cane-juice is occasionally found eminently benefited by this mode of treatment.

Almost all viscid cane-juice is so, but that which is obtained from one of the conditions of the cane, described, usually, as being "burnt," is the one to which it is most applicable.

9. *Defecation by diacetate of lead.* When seven parts of finely powdered litharge, six parts of sugar of lead, and thirty parts of water, are digested together at a moderate temperature, the liquid which is found at the top consists of this salt in solution in the water. It constitutes the *liquor plumbi subacetatis* of the pharmacopœia, and is often considered as a tribasic salt.

If to 300 gallons of cane-juice, accurately neutralized with lime or chalk, five ounces by weight of this liquid, diluted in a quart of distilled water, be added, and the whole be carefully stirred and heated, the most complete separation of all the organic matters, sugar alone excepted, is immediately effected.

A patent was taken out a few years ago by some parties in this country, for defecating cane-juice and other saccharine liquids by this means. It was therein proposed to precipitate any excess of the diacetate of lead which might remain in solution with the biphosphate of lime.

This process requires a double clarification; the acetate of lead should be added in one vessel, then the cane-juice, having been deprived of all the insoluble coagula which had resulted from the

action of this substance, must be passed into a second; and therein, when mixed with a certain quantity of the biphosphate of lime, it must be boiled for a few minutes, and again filtered.

On the addition of the biphosphate of lime, it is presumed that the soluble diacetate of lead will be converted into the insoluble phosphate of lead, and that the acetic acid will form, with the lime, an acetate of lime.

That this double decomposition would take place under ordinary circumstances, must be admitted; but that it will *always* do so, at least, perfectly, when sugar is present in the solution, may be doubted.

I have defecated cane-juice repeatedly with the diacetate of lead, employing, however, generally the sulphate of alumina as the decomposing agent. In every instance the test of sulphuretted hydrogen was applied to the filtered liquor; and it not unfrequently happened, that, in spite of all the care bestowed, a quantity of lead was detected in it.

For this reason, from the additional time and labor required for the double clarification, and from the amount of acetic acid set free, which, whether in that state or when combined with a base, would prove injurious to the sugar, I conceive that this process would be inapplicable to the manufacture of sugar in the colonies.

Indeed, it has been used there, and the consequences which ensued to a great number of persons who made use of the sugar, are now a matter of history. The effects produced in the case alluded to, were, no doubt, much more severe than they would have been, had the cane-juice or syrup been properly treated; so that a portion of the lead having been rendered insoluble, had been separated by means of filtration. The fact of their having been produced, however, indicates the impropriety of admitting the employment of the salts of lead in any of the processes, either of the manufacture or the refining of sugar. Its presence is easily detected; and, if no other evil consequence ensued, its discovery would cause all sugars, imported from the estate where it had been employed, to be regarded with suspicion, if not altogether unsaleable, for a long time afterwards.

10. The bark of the wild elm, *theobroma guazuma*, has been used in Martinique and Guadaloupe for defecating, or rather for clarifying cane-juice, with considerable success it is said. I have never seen this substance employed, and therefore am ignorant of its value as a *defecating agent*.

I have now mentioned all the methods of defecation, which I think may be employed with advantage in a colonial boiling-house. I have endeavored to point out the importance of this operation, and to show, that upon its being well or badly performed depends much of the success of all the subsequent processes.

That defecation may be effectual, a temperature sufficient to produce the ebullition of the cane-juice is necessary. As at present performed, the cane-juice is not allowed to boil; otherwise the separation of the flocculent coagula and other solid matters from the *liquor in which they are suspended*, would be impracticable. The

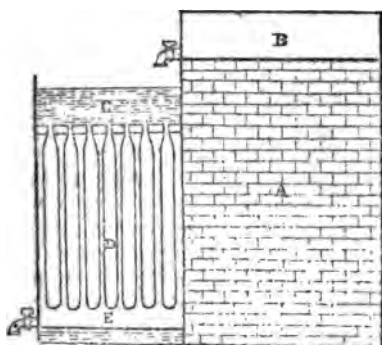
heat is raised to that point, merely, which is necessary to produce the cracking of the cane-juice; and this degree effects a partial separation only of the substances which are coagulated by heat.

Should the temperature exceed the above point, ebullition would ensue, and filtration is then required to separate the coagula. The advantages which filtration at this stage of the manufacture present may be stated as follows:—1st. The greater facility of managing the operation, as the cane-juice being allowed to boil, the attention at present required to the due regulation of the temperature may be dispensed with. 2d. Ebullition is essential to the complete coagulation of the albumen. 3d. Economy of time, as, after two or three minutes of smart boiling, the liquor is allowed to run into the filters at once. 4th. An increase in the quantity of liquor, as nearly the whole passes through the filters, the solid matters alone being retained. 5th. The complete separation of all solid matter, and the greater transparency of the defecated juice.

The necessity for the filtration of the cane-juice being performed, either at an early or later stage of the manufacture, is so obvious and so universally admitted; and as it is an operation which can be performed in every boiling-house, as at present constructed, during some part of the process of sugar-making, it is surprising that it has not been universally adopted.

The filters in use in Europe to separate the mechanical impurities from syrups, are known by the name of bag filters: they consist of a number of strong calico bags, about eighteen inches wide, and from three to five feet in length, each of which is introduced into another bag of the same length, but only six inches wide, and made of a strong and open canvass. Into the neck of each sack thus arranged, is inserted a short metal tube, to which the sack is tied, and by which it is fixed to the bottom of a cistern adapted to receive the cane-juice as it comes from the clarifier. This vessel is placed over the case in which the filters are contained.

It is obvious, by such an arrangement, a large amount of filtering surface is obtained in a very small space. We are, therefore, supplied with a means of most perfect, and, at the same time, most rapid filtration. This apparatus can very easily be made in every colony. The case may be very conveniently constructed of wood, and at the bottom should be attached a cock, which either allows the liquor to escape into the coppers, when practicable, or, when that is not the case, into a receiver constructed for the purpose. The apparatus should be placed under the cock of the clarifier, and, of course, the number of them must be equal to that of the clarifiers. Each should contain a set of twenty bags; and another set should be provided for use when the first are being cleaned. The accompanying sketch will enable us to form an idea of the construction of a set of bag filters, and their mode of application.



- A. Wall of clarifier.
- B. Clarifier, with cock.
- C. Upper cistern of filters.
- D. Filters enclosed in their case.
- E. Lower cistern and discharging cock.

If the double sieve, formerly described, is not employed for straining the cane-juice previously to its admission into the clarifier, it ought now to be used and placed between the cock of the clarifier and the lower part of the upper cistern of the filters; otherwise the bags would be speedily choked, and the operation would consequently be retarded.

A very few dollars would be required to form the necessary number of filters if expended in the colony. If preferred, they may be obtained from any of the coppersmiths in the large towns of England and Scotland.

In the manufacture of beet-root sugar, the defecated juice, instead of passing through bag filters, is made to percolate through beds of animal charcoal, which has already been nearly exhausted by the filtration of inspissated syrup. On an estate where animal charcoal is used for the filtration of the syrups, it may be advisable to wash out the adhering syrup with cane-juice instead of water, as it may be considered more economical. I doubt, however, whether this would be a very practicable operation on a large estate, and when time is so much an object.*

The foregoing remarks are applicable to the clarifying vessels now in use in the colonies. These vessels, perhaps, might be made a little deeper with advantage.

Steam defecating vessels have been lately constructed. They consist of an iron chest lined with copper, in which is coiled a hollow pipe, made of the latter metal, having an area and length sufficient to supply the due amount of high pressure steam to effect a rapid ebullition of the cane-juice.

Were steam the heating medium in use in the other stages of the manufacture, no doubt it would be equally applicable to the one before us. But to use it in this part of the process where it is not required, and not in the others, would be a piece of folly, which, I trust, it is not necessary to point out.

* Perfectly practicable; used on two estates in Louisiana; on plantations greatly preferable to the bag filters, which are very troublesome.—[Note by a friend.]

Art. III.—INDUSTRY OF THE SOUTHERN AND WESTERN STATES.

VIRGINIA—NORTH-CAROLINA—SOUTH-CAROLINA—GEORGIA—FLORIDA
—ALABAMA—LOUISIANA—MISSISSIPPI—TENNESSEE—KENTUCKY—
OHIO—MISSOURI—MICHIGAN—ILLINOIS—INDIANA—IOWA—WISCON-
SIN.

THE Secretary of the Treasury, it will be remembered, in 1845, issued a circular to all the manufacturing, commercial and agricultural interests of the different states of the Union, and appended to his report of that year the various answers which had been received in his office. These answers being partial and very incomplete, were not digested, but published *in extenso*. The manufacturers, for a large part, did not answer at all; and from many of the states, there came but the most meagre returns.

As, however, among these papers thus published by the treasury, there are many of considerable value, embodying a vast amount of practical information, we have thought some service might be done by an analysis of them, especially of those relating to the Southern and Western States, which are in general most complete.

From many interesting points there are no returns, and often where they are given, many discordances exist in different statements. The parties often appear to have a case to make out, and we are sometimes inclined to suspect the influence of politics. Nevertheless, as we give both sides a hearing, no mischief can accrue.

Nothing more than such a state of things should urge upon the states the importance of establishing BUREAUS OF STATISTICS, in connection with their governments, as was lately done in Louisiana. The expense would be a mere trifle in any case; the advantages inappreciable. Mr. Burke, in his last Patent Report, says: "I have been informed, that a bill has been introduced in the legislature of Louisiana, providing for the establishment of a *Bureau of Statistics*. It is ardently hoped the example will be speedily followed by the other states of the Union."

It will be observed, that these returns were made several years ago, and that agriculture, commerce and manufactures have increased vastly in all the sections since then. In regard to most of the states, the reader will find in the volumes of our Commercial Review, published in 1846, '47, '48, the very latest, most complete, and reliable particulars to which we refer. We may hereafter digest the returns to the circular from the Northern and Eastern States.

1. Commencing with VIRGINIA, the returns from it are utterly unimportant. Mr. Points, of Staunton, enumerates horses, cattle, mules, sheep, swine, poultry, wheat, barley, oats, rye, buckwheat, corn, wool, hops, wax, potatoes, hay, flax, hemp and tobacco, among the agricultural products. Flour and tobacco principal exports. Manufacture of iron increased 10 per cent. since 1842.

2. From NORTH CAROLINA there are three returns. Mr. Jones, collector, at Wilmington, states there are in Cumberland county six cotton factories, water power: three joint-stock, established prior to 1810: largest capital, \$110,000; others average \$40,000; annual profits about 11 per cent.; lumber and turpentine business equally as profitable. Factories work ten hours a day; much of their products sent to northern markets. Of these products of North Carolina, a small portion is exported to British North America, but no shipments are made direct from North Carolina to foreign ports. The western portion of the state is supplied with domestic iron, and the factories are remote from navigation, and from the points of importation. Mr. Singleton, of Newbern, states, North Carolina produces cotton, rice, tobacco, corn, wheat and oats: exports boards, planks, scantling, square timber, masts and spars, staves, shingles, heading, hoops, tar, pitch, rosin, turpentine and spirits of turpentine; chief exports, wheat and corn. Mr. Pritchard, of Elizabeth city, estimates nineteen-twentieths of the capital of North Carolina employed in agriculture; average profits on agriculture, last three years, had not exceeded 2 per cent., partly from a failure of crops. Agricultural prosperity of state greatest from 1832 to 1841, capital paying from 5 to 8 per cent.

"The state produces a sufficiency and an excess, except horses and mules, which are brought here in limited number, from Ohio, Indiana, Tennessee, Kentucky and Western Virginia. The prices have been 33 per cent. lower the last three years than the ten preceding. The decline I attribute to the reduced means of purchasing, in consequence of the low price of wheat and corn. We export tar, turpentine, lumber, salted fish, &c.; it is difficult to say whether they have been affected by the tariff of 1842. We export but little direct, owing to the peculiar situation of our state and its bad outlets to the ocean—most of our produce finding its way to New-York, (through the ports of Virginia,) and to South Carolina and Georgia. Some lumber, corn and beans, go directly to the West Indies. The prices are regulated by the foreign demand. We have 25 or 30 manufacturing establishments (mostly cotton) in the state. They are said to be doing well. Ship-building was once followed to a great extent, but at present, there is not enough tonnage to do the coasting trade, having to rely on canal boats of Norfolk and the New-England vessels. The capital employed in commerce is about as one to two of the agricultural products and staples for sale and export."

3. SOUTH CAROLINA.—P. W. Fraser: "Products—wheat, corn, rice, cotton, tobacco, potatoes, sugar, hay, hops, silk, wine, &c. Rice, cotton, corn, wheat and potatoes, are the principal staples of South Carolina. In 1840, 60,590,861 lbs. of rice were produced; 61,710,274 lbs. cotton; 11,722,805 bushels corn; 968,354 bushels wheat, and 2,698,313 bushels of potatoes. The price of rice has been very low for several years, until the present time; and my estimated average profit on capital for the last three years 6 per cent.,

after deducting all expenses. I confine my answer to this one particular. The price of rice from the year 1832 to 1841, has varied almost every year from 60 cents per bushel, rough rice, to \$1; clean rice, \$2.40 to \$4 per 100 lbs. I estimate my average price of rice at about 70 cents per bushel rough rice, or \$2.80 per 100 lbs. clean rice, in consequence of rice selling cheaper at the lower than higher point of the market. Indeed, it has seldom happened, that rice sold in the Charleston market at \$1 per 100 clean rice, or \$1 per bushel rough rice. The annual average income per head or laborer, deducting all expenses, can easily be estimated by the hire; by which standard I am disposed to be governed; and I consider full task hands must have brought annually, during these years, 100 per head, and the furnishing \$15, leaving \$85; many planters realize \$100, or more, depending upon locations, &c. The state of South Carolina is not dependant on any state, and raises largely of every kind; but many horses and mules are brought into the state and sold, from Kentucky, Tennessee, &c. Number of horses in 1840, 129,921; but cannot give the average annual amount or price for the years specified. Aggregate amount of wool in 1840, was 299,170 lbs. Previous to and after I cannot say; prices generally prevailing from 25 to 50 cents per lb. In 1840, iron, 2,415 lbs.; salt, 2,250. Gold, granite, marble and other stones, are found in this state, but cannot say what quantity or price for the years specified."

R. F. W. Allston, of Waccamaw Beach, answers elaborately the circular of the Treasury. "Cotton and rice are the agricultural staples of South Carolina. The following statements will be understood as relating to the latter staple exclusively, unless cotton be expressly named. In the business of cultivating and preparing rice for market, a capital of \$18,000,000 is employed. Average per cent. profit since 1842, 7 $\frac{1}{3}$; from 1832 to 1842, 8 per cent. For pork and bacon, in the year 1841, and prior, I expended \$200 per annum, where I now do not lay out \$40, notwithstanding the quantity consumed on the plantation, 10,000 lbs., has been increased to this extent. Boards, scantling, shingles, staves, tar, &c., are also exported from South Carolina.

"Fifteen-sixteenths of the rice crops is consumed by foreigners, and five-sixths of the cotton; exports, cotton, principally to Britain and France; one-eighth goes to north of Europe, Mediterranean, &c. The exports of rice are principally to the north of Europe, Great Britain and Cuba. To Great Britain it is exported chiefly in the rough or crude state, called *paddy*; some shipments are made to France, clean and in the rough, the choicest samples being selected. About one-fourth of the crop is shipped coastwise, principally to New-York and Boston, whence, for the most part, it finds its way to the north of Europe and the West Indies. In Cuba the consumption of Carolina rice is about 17,000 barrels, (average 600 lbs.) Competition is met with here in rice grown in Old Spain, in Maranhun and Campeachy.

"In England and the north of Europe, the competition encountered

is great, being from the Java and East India rice, which can be afforded much lower than ours. In England there are mills (constructed by Mr. Lucas, of this state) which will prepare over 300,000 bushels. Whenever it becomes the interest of their capitalists not to purchase our rough rice, the East India paddy is put under the pestle, and thus thrown into the European markets, in a better condition far than they can possibly put it in India or Java. There are several cotton factories in the state operating on a small scale: in Pendleton, in Greenville, (one here of paper also,) in Spartanburg, (one here of iron also,) in Darlington, one owned by Col. J. W. Williams, in which he employs from 40 to 50 operatives. There was one in Marlborough with superior water-power, but I believe it has been abandoned or converted to some other use. In Barnwell, the 'Vaucluse' is very successful; in Lexington, near Columbia, the 'Saluda' company divided 5 per cent. the last half year. Limited as is the number of these factories, it is believed they are not dependent for their profits on the present duties; but it cannot be doubted that a number of them were brought into existence by the patronising countenance of government, and stimulated by the temptation to share a portion of the immense profits derived from their peculiar *tariff protection* by the similar establishments at 'Lowell,' Fall River, Paterson, and elsewhere.

"Many of our cotton-planters have already set about manufacturing at home their woollen and cotton goods. I have received, as a present, some of the goods thus made, now and heretofore; they will wear almost as long again as the goods, for the same purpose, coming from the protected factories of the north.

"The average annual imports for ten years, from 1833 to 1842, were \$2,089,463; average annual exports for the same time, \$10,291,735. The average annual imports for two years, 1843 and 1844, were \$1,213,112; average annual exports, same time, \$7,597,045. In the year 1800 the produce of the state was exported from her own ports, at which were also received the return cargoes which paid for it. Then trade was brisk; all the interests of the state flourished in a high degree. Then the imports at the port of Charleston yielded a revenue of \$2,203,812, (less expense of collecting.) Now, (1843,) the duties collected at the same port are \$158,405, gross. The great portion of our import business is done in the northern ports, where the chief revenue is collected on them. South Carolina produces, for exportation, as much rice now as then; but the profits of the commerce based upon her great staples ebb to other ports than her own. One-fourth of the rice crop is shipped eastward, to be exported chiefly to Europe and elsewhere from northern ports.

"Wool is raised in sufficient abundance by many planters. I have no means at hand to ascertain the aggregate quantity. I have ascertained, however, that it is sold at more than 25 cents per pound. It is chiefly raised by the same planters having a surplus, being in the habit of supplying their woolly neighbors in the country, at a very low price, and then mixing with cotton, for their annual (home-

Edmund Webb, of Anderson Court House, states : " the profits on well-cultivated farms in the upper part of the state, $3\frac{1}{2}$ per cent. on the capital ; in the lower part, 5 per cent. State does not raise supply of horses, mules and hogs, by perhaps one-tenth of former, and one-fourth of two latter ; introduces them from Tennessee and Kentucky ; average price of horses, 1842, '45, \$65, mules, \$50 ; pork $2\frac{1}{2}$ a 3 cts. gross—a reduction on previous averages.

" We have no mines in the state worth mentioning, except a few gold mines, hardly worth working. We have a few cotton and iron factories in the state—twelve or fifteen of the first, and five or six of the latter. The cotton factories make yarn mostly, and weave some coarse cloths ; the iron factories make bar and sheet iron, nails, castings, &c. ; cannot state their capital ; they are, however, on small scales ; their profits are less for the last three years than they were the ten preceding I should say, as they sell their articles from 50 to 100 per cent. lower than some years past ; yarn now \$1 per bunch, ten years ago, \$2 ; nails six cents per pound, ten years past, ten cents. Still their profits are much better than those engaged in raising the great staples of the state. But very few of our citizens are engaged in navigation, and fewer in ship-building. The capital invested by our citizens in commerce, bears a very small proportion to the capital invested in the agricultural products and staples of the state."

The Chamber of Commerce, of Charleston, through a committee, reply : Cotton, rice and Indian corn, are the principal staples grown in South Carolina ; the two former only are exported. The capital employed in their production cannot be estimated at less than \$150,000,000. The average profit is generally estimated at three to four per cent., and the difference in the average profit for the nine years preceding 1842, and for the three last years, may be inferred from the statements in another part of this report, in answer to other questions connected with the subject. The average price of cotton for the nine years preceding 1842, that is to say, from 1833 to 1841, was \$12 $33\frac{1}{4}$, and for the three years from 1842 to 1844, \$7 $33\frac{1}{4}$; of rice, from 1833 to 1841, \$3 per 100 lbs., and from 1842 to 1844, \$2 54 per 100 lbs. The state does not raise a sufficient supply of cattle, mules, hogs, Indian corn or oats. They are obtained from Virginia, Maryland, North Carolina, Tennessee, Kentucky and Louisiana. The committee cannot give at this moment their average price or value. All cotton goods, especially the coarser kinds, have been higher in the last three years, while cotton has been lower than it was ever known ; rice, also, has averaged \$2 54 in the last four years, and in the four years preceding 1842, \$3 51 per 100 lbs. It is now bringing a much higher price, the crop being one-third short, but more particularly in consequence of the failure of the crops in Europe. The coarser manufactures of every kind, which enter into the daily wants of the masses, are always the most extensively consumed ; and all of these articles have been relatively high in the last three years, as compared with the prices of cotton and rice. Timber and lumber are the only arti

of any consequence, the product of the state, besides the staples, that are exported.

Five-sixths of the cotton grown in the United States is exported and consumed abroad, and the same proportion may be assumed as correct in relation to that portion of the crop raised in Carolina.* Three-fourths of the rice grown in Carolina is exported and consumed abroad. The price of the former is governed almost entirely by the foreign demand, and the latter also, except in the summer months, when the supply is sufficient only for the home consumption, and there is a cessation of export. There have been several cotton factories established within the state in the last few years. Not enough is known of them to give the information asked. They are reported, however, to be doing a profitable business, and it is believed that they would be equally thriving with a fair revenue duty.

The growers of rice, cotton, and tobacco, in the last twenty-three years, have furnished 67 per cent. of the entire export of the country, and they are heavily taxed on all the articles used in their production.

The manufactures in the same time have furnished one-tenth only of the value of the entire export, and every article used in their particular branch of industry is either duty free or lightly taxed.

* Mr. Webster, in a speech delivered at one of the fairs in the interior of New-York, in 1843, stated that the consumption of cotton in the United States was equal to one-third of the cotton crop. Mr. Webster displayed great ignorance, or he practised a great imposition upon his hearers. The cotton crop of 1842-'43 was 2,378,875 bales, and the consumption (1842-'43) 325,129 bales, or one-seventh only of the crop, in round numbers. The crop of 1841-'42 was 1,683,574, and the consumption 267,850, being less than one-sixth; and the crop of 1844, 2,400,000, and the consumption 389,000, or less than one-sixth of the crop also. There is a good deal of cotton manufactured on the plantations for domestic use, and by mills in the interior of the southern states, but this can make no difference in the statement, as the whole quantity is relatively small, and the cotton so used is not taken from the ports, and is not consequently included in the crop, so that both items may be thrown out with perfect fairness.

It may be said that the decline in the price of cotton is to be attributed to an increase of production beyond the wants for consumption, but this is an error. The cotton crop of the United States of 1844 was 2,400,000 bales—the largest ever made; notwithstanding, the stocks in the American ports, on the 30th August, the end of the cotton year, were less than they were on the 30th August, 1844,..... 65,646 bales.

By the last dates from Havre, the stocks of American cotton were
less than last year, at same time..... 19,500

83,146
In Liverpool, they were more than at same time last year..... 64,300

Making a deficiency in stock of.....20,846 bales,
as compared with the same periods of 1844, notwithstanding a crop of 2,400,000 bales.

The stocks in the other continental ports cannot be stated, but they are not large. The stocks in spinners' hands in France are moderate. In England they are large, but much smaller, compared with the extent of their trade, than it was their practice to hold some few years since.

It is not unreasonable to assume, therefore, that had not the consumption been curtailed in the United States by the excessive duties on imports, and more especially those on the coarser kinds of cotton goods, the consumption of cotton at this time would not only have been larger, but quite sufficient to have kept pace with the production, without the disproportionate decline in price that has taken place between it and the articles manufactured from it.

The iron mines are extensive, and some small working by bloomeries have been made. These are of no consequence. There are three establishments for the working of iron mines, by blast furnaces, rolling mills, &c. They are located respectively in York, Union, and Spartanburg districts. To each establishment are attached considerable mines of iron ores. There are eight blast furnaces, three rolling mills, three foundries, and two nail factories, in the three establishments. They are worked chiefly by slave labor; their product varies from 3,500 to 4,000 tons of pigs to half that quantity. This is worked into castings, bars, nails, &c. Prices have varied considerably, being influenced more by the ability of consuming than other causes. The consumption is local, among the planting interests; and whatever depresses that, and diminishes its ability to consume, lessens demand and prices. Since 1842, the price of iron has been reduced from this cause some 30 per cent., until latterly it bears a better rate. This again is to be attributed to the fact that a drought of nearly two years has rendered the supply of water for the works often inadequate, and the production has been very considerably reduced. The price of iron in the markets that are supplied by these works, although affected, is not yet controlled by the tariff. Their location is so far in the interior as to constitute a protection against foreign competitors, and the cheapness of provisions and slave labor, with competent skill and management, will always render them independent of government protection.

Commerce.—The proportion that the capital in the state invested in commerce bears to the value of its staple products, cannot be correctly stated in figures. It is quite ample, however. The interest on money has been moderate and steady for many years, and capital can always be had at the legal rate of interest for all legitimate purposes of business. The commercial interests of the state have been much depressed for many years. The draining influence of the tariff has no doubt been a leading cause. The products of the soil are sold at low cash prices, and all articles of consumption are bought at high monopoly prices. The effect in a series of years must be increased poverty, a deprivation of comforts, and a crippled trade. The principal staple of the state, cotton, rates lower in price than it has ever done, while in Europe and America all manufactures, especially of cotton, are higher than they have been for years.

Ship-building.—Charleston was at one time engaged in ship-building to some extent, and many ships were owned by its citizens. There are now very few ships owned by them, and the vessels built annually are very few, and generally of the smallest class. The high duties on iron, chains, cables, and other articles of outfit, renders them costly in proportion to the cost of British vessels; and the competition from these, and the small direct import trade from Europe, renders it unprofitable to own them. American tonnage has not increased in the same proportion as British tonnage, in the last ten or fifteen years. Even in the ports of the United States there has been a great increase of foreign vessels in the last few years.

The amount of foreign tonnage employed in the trade of Charleston

and other southern ports is more remarkable. By the table it will be seen that the foreign export of South Carolina in 1844, was \$7,429,585. Of this amount there was exported in American vessels \$3,202,386, and in foreign vessels \$4,227,199. There were 238 American vessels entered the port in the same year, or 49,801 tons, and 159 foreign vessels, 48,926 tons.

4. GEORGIA.—From this state there are a great many answers, and they are almost as full as those from South Carolina.

The President of Richmond Factory, near Augusta, gives average profits before 1844, 19 per cent., since 25 per cent. per annum; planting interest yielding 5 or 6 per cent.; employ 50 persons; wages 10 to 50 cents per day; mostly women and children, employed all the year, 12 hours a day. Wages of agricultural laborers 50 cents a day; plough boys \$4 a month and board. Market for cotton goods at home, also New-York and New-Orleans.

John Fontaine, for Columbus cotton and wool factory, answers—capital \$50,000. First four years no profit; since then 20 per cent.; spins annually 300,000 lbs. cotton, half in yarn, rest in osnaburgs. Spins also 25,000 lbs. of wool into heavy negro cloths. Uses mostly domestic wool. Employs seventy hands, mostly women and children; average wages \$9 per month, houses being furnished them, but they providing board and clothes. Work 10 to 12 hours a day, all the year. Market for goods, Georgia and South West. 200 persons reside at the factory. Whole amount of cotton manufactured in Georgia, 10,000 bales.

Mr. Bulloch, in relation to Roswell Factory—manufactures cotton and wool; capital \$70,000; profits 20 per cent.; employ 112 men, women and children; average wages \$1,50 per week; work 12 hours a day, all the year.

Manufactories in Georgia: Roswell factory, Cobb county, (given above;) Athens manufacturing company, Clark county; Georgia company, Clark county; Columbus company, Muscogee county; Elbert company, Elbert county; Scull Shoal company, Green county; Eatonton factory, Putnam county; Upson company, Upson county; McCalpin factory, Upson county; Schley's factory, Richmond county; Rock Mills factory, Hancock county; Deametre's wool carding factory, Baldwin county; Thomaston manufacturing company, Upson county; Wayman's manufacturing company, Upson county. He also states that "associations have been formed in Columbus, in Muscogee county, and in Augusta, Richmond county, which promise manufacturing establishments upon an extensive scale;" that the capital of the "Athens Manufacturing Company (established in 1836) is \$94,000;" and that the answers given in the case of the "Roswell factory, to the questions propounded, will, in a great measure, elucidate the affairs of all the others." That "the Athens company last year divided 24 per cent., with as good a prospect for the present. Increase of profits arises from an increasing demand in the states of North Carolina, South Carolina, Alabama and Louisiana. 1,000 bales, or 350,000 lbs. cotton, at 5 cents, is the annual consumption, amounting to \$17,500. Wool

consumed, \$2,000. No goods of like character imported from abroad." [The latter remark is general, and applies to cotton and woollen manufactures of Georgia.] "Average number of men, women and children, 75 to 80—all white—largest proportion, women. Cost of the manufactured article to the manufacturer has undergone an annual decrease in the value of the materials. Labor stationary; average labor, 12 hours. Manufactures sold for cash. Supposed profits on capital otherwise employed in the county and state, about 12 per cent. The Georgia manufactures require no protection. Similar manufactures exist in North Carolina, South Carolina, Alabama and Tennessee; but to what extent is not known. No manufactories of salt in Georgia, but several of iron in the counties of the Cherokee country, beyond the reach of foreign competition, and commanding a ready market in the neighborhood. Decatur, in De Kalb county, manufactures to some extent—cannot tell whether they have been influenced by the tariff of 1842." Mr. Bulloch also states, that "a correspondent, and one largely interested in one of our manufacturing establishments, states that 'no manufacturer will abandon if his profits yield 10 to 12 per cent., and that one of the shrewdest northern manufacturers (Mr. Merrill) of New-York, who has a factory near Athens, and is now concerned in building an extensive one on the Oconee river, in Green county, told me the present rate of duties was a large protection, and he expected to retire with a fortune before competition could bring it down to 12 per cent. profit; that our factories in the interior increase their profits by having a store from which the operatives are supplied, and also the re-sale of articles received in barter; that any number of operatives can be had in Georgia, whose average wages will not exceed \$1 50, and no reduction of duties will now stop the increase of manufacturing establishments; and a war with Europe would not deprive us of the necessaries of life, and materials for army and navy. The aggregate capital invested in manufacturing establishments in Georgia must amount to a million of dollars, and is rapidly increasing. The profits upon such investments are considered greater than on that of any other species of property. Duties beyond a revenue standard seem not to be required, even by those engaged in manufactures."

James Cumming, of Savannah, answers for the agriculturists.—"Income per hand of slaves, \$35 since 1842, 50 to 60 dollars usually. Cotton and rice are the articles of product and exportation, and support all the business of the state. Profits not more than five per cent. The product of cotton has been unfavorable for some years, compared with previous results. Public opinion has varied considerably as to the cost of producing cotton—some five, some six, some seven cents per pound; but this depends on lands, location, &c. At ten cents at the shipping ports, a fair profit reaches the planter, leaving $7\frac{1}{2}$ to 8 cents on the plantation. That price has been uncommon since 1842. In 1844-'45, cotton did not average more than six cents at the ports, gross, $1\frac{1}{2}$ cent off for expenses. Tonnage partially or wholly owned in the state; does not exceed 7,000 tons. Gold is found in various parts of the state, and worth

to some advantage ; iron mines are coming into use, on a moderate scale."

Robert Habersham, of Savannah, answers : " State does not raise sufficiency of horses, mules, hogs and cattle ; amount imported very great. About four-fifths of the articles made for export are consumed abroad, the prices being governed by the foreign demand ; principally shipped to England, France, Germany and the West Indies ; the East India rice comes in competition with that grown by us ; the high duties imposed by the tariff lessen our ability to meet that competition successfully, by inviting high duties in return on our staples, in the countries which consume them. We have 20 or 30 manufacturing establishments in the state ; they manufacture cotton goods ; capital employed over \$1,000,000. Profits for the last three years considerable, say 20 per cent. per annum. The duties increase their profits, but are not necessary to keep them in operation at a fair profit ; a moderate duty would make them as productive as those growing the great staples. The state has not been engaged in ship-building, except to a limited extent. The capital engaged in commerce bears a very small proportion to that invested in agriculture ; probably not one-twentieth. The commercial interests have, to a limited extent, been affected by the tariff ; to what extent, cannot say."

Mr. George, Inspector, gives the value of the crops of cotton and rice of Georgia, 1845 :

296,535 bales cotton, a \$21.....	\$6,227,235
8,009 " (Sea-Island,) \$70.....	560,630
28,232 casks rice, a \$20.....	564,640
	\$7,352,505

PRICES GEORGIA SEA-ISLAND COTTON.

1832.....20½	1837.....40½
1833.....15	1838.....31½
1834.....22½	1839.....40
1835.....37½	1840.....24
1836.....43½	1841.....23½

Mr. Smetz estimates the lumber exported from Savannah as ten-fold what it was 25 years ago.

EXPORTS, 1845.

Steam sawed,.....	\$155,000
River lumber and shingles,.....	19,000
Ranging lumber,.....	42,000
	\$216,000

Amount of same articles for home consumption, \$100,000. Number of hands employed as great as would produce 65,000 bales of cotton. This business renders lands valuable which are unfit for the cultivation of cotton ; this business is also beneficial to the navigation interests ; this branch is steadily increasing ; the forests afford supplies which are inexhaustible. A sudden impulse has been given *also* to another branch, in consequence of the article being admitted, by a recent act of Parliament, free of duty, into British ports,

viz: *oak staves*. This article, almost unknown amongst our exports, will hereafter figure as an important item. The quality of the oak is said to answer better in the English market than the northern oak. In the English market, Georgia pine enjoys an undisputed pre-eminence over all other American pines, &c., &c.

5. ALABAMA.—There are but two or three meagre reports. An iron and brass foundry at Mobile, averages 25 per cent. profit, and makes \$8,000 in castings, and \$7,000 in repair of steamboats per annum. Plenty of iron ore, but none worked in the state.

Mr. Benson, in reply to Circular No. 1, states, that "there are three cotton factories in the state; one in Bibb county, a joint-stock concern, established in 1835; two in Tallapoosa county, (one owned by Barrett & Marks,) established in June, 1845; capital \$30,000, no portion of it borrowed; 15 per cent. profit on capital; employ 30 hands, one-half being their own slaves. The other owned by two individuals; established about one year. In Autauga county is an extensive manufactory of cotton gins, which turns out about 500 annually. All these employ water-power. In Benton and Talladega counties there are several furnaces and forges; water-power. A furnace at or near the city of Mobile; steam-power. Cannot state the amount of business. The profits on agriculture do not exceed 3 per cent., exclusive of the increase of slaves, &c., &c."

Mr. Fraser: "State does not raise sufficiency of horses, &c.; no ship-building; gold mines are worked in Randolph and Tallapoosa counties; iron ore in Talladega."

6. FLORIDA.—Robert Mitchell, Pensacola: No manufactories in Florida, except for salt and segars, etc. A. Gordon, Key West, says, salt is the only article manufactured in this district. The manufactory on this island was commenced in 1834. Present capital, exclusive of real estate, \$24,500; a joint-stock concern. Annual rate of profit 8 per cent. on the cash capital, after deducting expenses. 30,000 bushels manufactured last year. Average 23 cents per bushel. Quality greatly superior to the imported, being purer and heavier, weighing 86 lbs. to the measured bushel, while that from Turk's Island and Exuma, weighs but 72. Seven persons employed; negroes \$15, white \$25, per month. Sales for cash, and the principal markets, New-Orleans and other places along the Gulf Stream. Foreign articles of an inferior quality do enter into competition in other places, but not here. Price has decreased from 37½ to 23 cents, in consequence, in part, of the decreased duty on the foreign article. Dividends 8 per cent.

S. R. Mallory, Key West: Florida produces cotton, rice, tobacco, corn and sugar-cane. Raises sufficiency of horses and mules, and provisions. The section of country on the coast, south of Jupiter inlet, and east of Cape Sable, produces a native arrowroot, commonly called "coontée," which is manufactured by the settlers to some extent, not to exceed 20,000 lbs. per annum. This commanded in northern markets, in 1835-'40, 8 cents per lb.; and is now, in the same markets, worth 5 cents. No vessels built, though

ship-timber abundant. Samuel W. Spencer, Apalachicola: Nearly four-fifths of the capital of the state is engaged in the production of cotton for export, and corn for home consumption. Several of the counties on the river contiguous to this, to wit: Jackson, Gadsden and Leon, have occasionally produced some sugar, to the amount perhaps of 100,000 lbs.; tobacco is quite a large crop in the above counties, and will amount this year to 800,000 lbs., all of which will be shipped from this port to St. Mark's. Average income per hand, since 1838, \$75. The state does not raise a supply of horses, mules or hogs; the horses and mules are mostly brought from Tennessee and North Carolina; a large quantity of hogs were driven from Tennessee and the northern part of Georgia, to supply the counties on the river. There is also a large quantity of western bacon received at this place from New-Orleans for the interior of Florida, say 20,000 lbs. No articles manufactured in the state, except coarsest cottons and woollens. No mines worked. Robert Myers, Apalachicola: No ship-building; the only manufactories of the state are for segars, and sawing boards, &c., which require no protection; the profits are ample, but cannot say what; capital about \$600,000.

7. MISSISSIPPI, but two returns: Adams county cotton factory; no profits yet; employs 20 black men, 6 women and 4 children; works 8 hours—300 days. John D. Elliott, collector at Natchez, did not know of any other factory in Mississippi. H. Hobbs, of Jackson, says, products of state—corn, wheat, rye, oats, barley, grains, grasses, stock, cotton, rice and tobacco; whole industry engaged in producing cotton.

8. LOUISIANA.—Leed's foundry at New-Orleans, for the manufacture of heavy machinery, answers: Amount invested, \$250,000; annual profit 10 per cent. on capital; manufactures sugar-mills, saw-mills, cotton-presses, steam-engines, &c.; 130 men employed; mechanics wages, \$2 50 a day; laborers, \$1 50. Orleans Sugar Refinery answers: Capital \$60,000; 2,500,000 lbs. raw sugar of domestic growth used; 35 hands employed; average wages \$35 per month.

Judge P. A. Rost* contributes a most interesting letter, which we publish very nearly in full:

"Sugar and cotton are the main agricultural products; rice and tobacco are raised to a limited extent; large quantities of hay, corn and potatoes, are also raised for the use of the plantations; these are consumed in producing the crops of sugar and cotton.

"The capital engaged in the cultivation of sugar is increasing rapidly, and may now be stated at \$75,000,000, about \$12,000,000 of which consist of buildings and machinery, exclusively applicable to the manufacture of sugar. The capital engaged in the cultivation

*E. J. Forstall communicates voluminous and valuable papers, some of which we have previously digested, and others we shall refer to in coming numbers of the Review.

of cotton is about \$90,000,000; that engaged in the cultivation of rice and tobacco, does not exceed \$1,000,000.

"More than half of the sugar and molasses raised, is exported by sea to the other states, and shipments are beginning to be made to England. All the remainder, except the consumption of New-Orleans, is carried by steamboats to the markets of the Mississippi valley. It must have required, this year, shipping to the extent of 100,000 tons to take away the sugar and molasses that went to the markets of the Atlantic coast. The amount of inland tonnage employed to carry the crop to New-Orleans, and the portion taken by the west to the inland markets, is still greater. The extent of shipping required to take away the cotton crop of this state is 100,000 tons, and an equal quantity of inland tonnage is employed in carrying it from the plantation to the New-Orleans market.

"The New-Orleans merchants receive a commission of two and a half per cent. upon the gross amount of the sales of our products; and the price is generally paid with the proceeds of bills which the bankers of that city discount at the current rates of exchange. This shows the vast extent to which the commercial and navigation interests are dependent upon our products. The mechanical and manufacturing interests are equally so. The increase in the cultivation of sugar is so great, that there has been all this season a scarcity of sugar-house machinery. The supply is not equal to the demand. A single iron foundry in Tennessee has sold, this season, \$50,000 worth of sugar-kettles, and would have sold more if it could have supplied them. Planters procure their provisions, corn and coal from the west—their clothing and machinery from the north and west. The machinery used for grinding, clarifying, boiling, granulating and refining sugar, is all domestic, and is superior to the machinery made abroad for the same purposes. New-York and Philadelphia furnish us with vacuum pans which London and Paris cannot match. The cotton planters require less machinery, and are turning their attention to the manufacture of their people's clothing. The bale rope and bagging which they require, has brought into existence the extensive manufactures of those articles which now exist; the building of sugar-houses and the putting up of machinery, employ a great number of mechanics, and their wages are gradually rising.

"I own a sugar plantation on the Mississippi river, upon which I reside. Twenty odd years ago, I established a cotton plantation on Red River, and I am still interested in its products. The land of both is fertile, the climate favorable to the products raised, and the cultivation equal to the average cultivation of Louisiana. Out of the three years last passed, two have been very favorable for cane, and one has been unfavorable. The average clear profit of the three years on the sugar plantation, has been seven per cent. upon the capital invested. Upon the cotton plantation the crop of 1842 was fair, and yielded a net profit of six and a half per cent., notwithstanding the low prices. The two following crops were half destroyed by the overflows and the army-worm. The total income

of the two years, was hardly seven per cent. The present season has been seasonable and free from accidents. The crop, if it can be picked, will amount to at least 150,000 pounds clean cotton, which, at an average price of seven cents, will produce \$10,500. The expenses of cultivation, bailing, transportation and sale, will not exceed \$3,000, leaving \$7,500 profit upon a capital of \$75,000; that is 10 per cent. Many persons, discouraged at the repeated appearance of the army-worm, are leaving cotton to cultivate the sugar-cane. Cotton, at from six to seven cents a pound, is a more profitable crop than sugar ever can be.

"I did not own the sugar plantation during the ten previous years; I learn that the average profits during that time were about the same, the only difference being in the value of the currency during the two periods. On the cotton plantation, the average profits of the ten years should have been over ten per cent. in the currency of the times. The place was badly conducted, however, and raised bad cotton part of the time; hence the small profits.

"The average annual income per hand on the sugar plantation, from 1842 to 1845, has been \$175; and must have been the same in the ten previous years. On the cotton plantation, since 1842, the worm and overflows have caused in two years the loss of a whole crop; counting those two years for one, the average would be \$145 per hand; and if the crop now on hand were included in the estimate, the average would be near \$160 per hand. In comparing the profits of the two cultivations, it should be remembered that the fixed capital on a sugar plantation working a given number of hands, is much greater than that employed on a cotton plantation having an equal number; and that the difference consists principally in buildings and machinery, subject to great wear and tear. So that the income per hand, in the cultivation of sugar, may be greater, while the profit on the whole capital is less.

"Cannot state the amount of the products of the state consumed abroad. Very little sugar has, as yet, been shipped to England, and the Louisiana cotton is mixed up, in New-Orleans, with that of other states, and sent partly to the north and partly to Europe. I do not believe that the foreign or home demand regulates exclusively the price of those staples. If a month hence news were received of a great rise in the price of sugar in England, and 20,000 or 30,000 hogsheads were purchased here at advanced prices for that country, it could not be said that the price of that sugar was governed by the home demand; and as the quantity shipped would necessarily increase the price of the remainder, that price itself would not be regulated by the home demand exclusively. The cotton of Louisiana is principally shipped to England and France. In the English markets we are met by the competition of the cottons grown in India. The duties imposed by the present tariff do not perceptibly lessen our ability to meet that competition successfully, and they gradually create a market for us, which will be more and more necessary as that competition increases.

"This state does not raise a sufficient supply of horses, mules, cat-

tle, hogs, salt provisions, corn, and coal. Mules are supplied by Kentucky and Missouri, coal by Pennsylvania and Kentucky; the other products by all the western states; cannot state the average value of the supply each year,—it amounts, however, to several millions of dollars. During the expansion of the currency, the price of all these products had been greatly increased; and, when the reaction took place, they fell below their intrinsic value. Under the operation of the tariff of 1842, the price of all has gradually improved; provisions and mules are now too high for the present prices of sugar and cotton."

9. **TENNESSEE.**—Hugh Harkins of Bolivar, and Thomas K. Porter: Annual profit agricultural hands on cotton, \$110; state raises its supply of everything. Agricultural products: corn, cotton and tobacco, hemp, wheat, &c. Three-fourths of capital of state in agriculture. Average price corn, previous 10 years, \$1 00 barrel. Exports iron and spun cotton to other states; numerous iron works, furnaces, forges, rolling mills, cotton and woollen factories in Tennessee. Steamboat building beginning to take root at Nashville; iron mines worked.

William Williams, Nashville: There are five or six factories to spin cotton, and one or two weave cottons and linseys; several others are soon to be put in operation. Some years past two or three steamboats were built at Nashville. It is said they are now built on better terms on the Ohio. Upwards of \$100,000 are sent from Nashville for steamboats.

10. **OHIO.**—R. Dickinson, Sandusky: State produces wheat, corn, pork, oats, potatoes, butter, cheese, tobacco, wool, &c. Wheat and corn are the great staples; the former mostly converted into flour; the latter into pork and beef. Capital employed in agriculture may be estimated at 300,000,000 dollars; in mines, commerce, and manufactures, estimated at \$60,000,000; capital employed in agriculture being thus five-sixths of the whole amount employed. All the interests named are connected with and dependant on agriculture. The commerce of the lakes, rivers, and canals, consists of transporting the agricultural productions of the state. These have created her commerce and navigation, and are almost the only productive industry of the state that will sustain other interests. Average profits on capital employed on well-conducted farms, for the last three years, in Ohio, after deducting incidental expenses, will not amount to 3 per cent. The prospects of agriculturists are extremely discouraging. The annual profits of capital employed as above, from 1832 to 1842, from 4 to 6 per cent. The price of wheat, from 1832 to 1842, at the lake shore in Ohio, about \$1 per bushel; from 1842 to 1845, about 70 cents per bushel. State raises sufficient supply of horses, mules, hogs, cattle, meats, and other provisions. Exports pig iron, lumber, furs, peltries, pot and pearl ashes, &c. The flour, wheat, corn and pork shipped directly to foreign countries go to Canada; those indirectly go to Great Britain and dependencies, Brazil, South America, Spanish Islands, &c. Our citizens on the lakes and rivers

are extensively engaged in ship-building and navigation. The capital invested is large, amounting perhaps to \$1,000,000.

The amount of wool is rapidly increasing; probably 6,000,000 lbs. now produced annually. Average price for the last three years 33 cents per lb. Cannot say what was the price per lb. for the ten years preceding 1842. We have coal and iron mines in abundance in Ohio. At least 20,000 tons of pig iron is produced annually in this state. The price has advanced since 1842 from \$18 to \$25 per ton.

W. M. Correy, Cincinnati: State produces about \$40,000,000 in provisions, horses, mules, &c., about one-half of which is exported. There are manufacturing establishments of almost every kind; and some in great perfection. Their aggregate capital is now not less than thirty millions of dollars; profits for the last three years have been great, judging from the fact that money can be loaned at 10 per cent.; and yet it is tending strongly to these establishments. This state builds annually about 50 steamers, at a cost of about \$1,000,000; the greater part of which is owned and navigated by the citizens of the state.

Elwood Fisher, Cincinnati: The west, including the states of Kentucky, Ohio, Indiana, Illinois, Missouri, and Michigan, and the Territories of Wisconsin and Iowa, had a population, in 1840, according to the census, of 4,131,370 persons, not quite one-fourth in number of the Union. In that year, the exports to foreign countries of products of the forest was \$5,323,085; of farming, \$18,771,075; both amounting to \$24,094,160. These we assume went from the west, because they can be delivered in Canada, the West Indies, and England, to which they are chiefly shipped via the lakes and the Mississippi, cheaper than from any other part of the Union. In the same year, the export of tobacco was \$9,883,957, of which one-third was western product. If to these we add the bale rope and bagging which enveloped the cotton export of that year, and which was supplied principally by Kentucky, we shall have an aggregate of more than thirty millions of western produce out of the total domestic exports, which amounted to \$113,895,634. So that the west, with much less than one-fourth of the population, supplied more than one fourth of the exports to foreign countries direct; besides the enormous quantity of her provisions consumed in the south, which entered into the production of cotton, and found their way in that shape to foreign ports—probably not less than ten millions more. Now, as the other sections of the Union possess much more capital than the west, they must, with the same population, produce more in value; and since their contribution to foreign commerce is less than ours, it is obvious that the proportion of our products, dependent on foreign commerce, is much the greatest. Agricultural produce is the natural want of a dense commercial and manufacturing population like that of Europe, and the natural product of such a soil and people as the western. If this trade is maintained, *the west will supply other sections of the Union with many manufactured fabrics*, the proceeds of agricultural products, for by this process cloth is obtained by the plough cheaper than by the loom. It is apparent, from the magnitude of western exports in 1840, that this *commerce* was actually

going on; the west, receiving in exchange for its produce manufactured goods more than it wanted, exchanged them with New-England and the Middle States for fish and such other manufactures as could not be profitably imported from abroad.

11. KENTUCKY.—Agent Louisville Manufacturing Company states: amount invested as capital, &c., \$100,000; profits 6 per cent.; produce 750,000 yards bagging and 750,000 lbs. rope, annually; consume 1,100 tons hemp, at about \$55 per ton; employ 80 men, 20 women, 70 boys and girls; men's wages \$3 to \$9 per week; women, \$2 to \$4; boys and girls, \$1 to \$3; work 12 hours the day. These wages 25 per cent. higher than in other employments in the state, from a supposed unhealthiness—same as at the north. Cost of manufacturing bagging since 1837 has decreased from 10 to 5 cents per yard; hemp in yard decreased 10 cents; total saving to consumer 14 cents per yard. Rope, price in 1839, 9 cents per lb; in 1840, 8; 1842, 6; 1843, $5\frac{1}{2}$; 1844, $4\frac{1}{2}$; 1845, 4. In United States, \$3,000,000 of bagging and rope manufactured annually, of which Kentucky produces $\frac{3}{4}$. This supplies the whole American demand. (Bagging) was formerly imported from Dundee and Calcutta chiefly;—no rope of consequence has ever been imported. When there has been a general failure of the hemp crop, or any other cause to produce a material advance in the price of rope, Sisal and Manilla (which are foreign product) have been brought into this country and made into bale rope. Tariff or no tariff has little or no effect at this time on the bagging manufacturer, for the reason that domestic competition in its manufacture has brought it below a price at which it can be imported *without the payment of duty*; and for the reason that the cultivation of hemp has been greatly extended in Missouri, Tennessee, Illinois, Indiana, and in this state, until more is grown than is required for the bagging, bale rope, and cordage factories. The Goulding Bagging Factory produces 1,000,000 yards bagging, worth $9\frac{1}{2}$ to 10 cents; profits on capital, 3 per cent.; consume 1,100 tons hemp, at \$70; price bagging 1842, 16; 1843, 14; 1844, 12; 1845, $9\frac{1}{2}$ and 10 cents. Product bagging in the United States, 18,000,000 yards; in Kentucky, 13,000,000; consumption United States, 15,000,000 yards.

Lewis Saunders answers: "Tobacco only, of the three named staples, is produced in this state; quantity, from forty to fifty thousand hogsheads; mostly sent to New-Orleans, thence to the eastern cities and to Europe; the remainder sent to Pittsburgh and manufactured at home.

"Kentucky produces for sale, besides tobacco, horses for the saddle, harness and plough; cattle, mules, hogs, sheep, poultry, beef, (*mess and prime*,) pork, (clear, mess and prime,) lard, oil, corn, oats, hay, potatoes, apples and other fruits, whiskey, cotton bagging, bale rope, negro clothing, hemp and wheat.

"These are the principal articles produced for export; and, except the article of hemp and a portion of those of beef and pork, in barrels, and a part of the whiskey, the remainder (four-fifths) is consumed by the cotton and sugar planters of the south; they are our best and only customers, except for tobacco, hemp, and pork.

Prices for our productions are ruled mainly, if not entirely, by the price of cotton and sugar. When the price of these articles is up, planters pay us good prices; our prosperity depends upon them. If they are depressed by the tariff, or other causes, we feel the depression also.

"We have numerous iron works, making the various kinds of *castings*, bar, rolled and slit iron, and nails, mostly consumed in the state; negro clothing sold in large quantities to the cotton and sugar planters. This article is made of cotton warp, filled with common wool; no foreign article can compete with it. Some cotton factories for spinning and weaving; productions mostly consumed in the state; a reduction of the tariff would but slightly, if at all, affect this interest. For an estimate, class the sheep of Kentucky at 1,000,000, mostly in small flocks; every farm has some. I know of but few large flocks in the state; nine-tenths of the wool is used by families in a domestic way; prices have been so low within the last three years that farmers are not inclined to increase their flocks."

A. Beatty answers: This state raises a sufficient supply of horses, mules, hogs, and cattle, and of meats and other provisions of all kinds, for its own use, and a large surplus of each of those articles for export. Besides the agricultural products, the state exports large quantities of cotton bagging, bale rope, twine, and other cordage, jeans for negro clothing, wool, lard, tallow, bees-wax, feathers, and various small articles, such as skins, furs, &c.

12. INDIANA.—J. Nelson, Fort Wayne: Products, wheat, corn, rye, oats, buckwheat, potatoes, flax and hemp, are raised extensively throughout the state. None of the staples of cotton, rice, or tobacco raised, except the latter, which is cultivated quite successfully and to a considerable extent in the interior, south-eastern, and south-western portions of the state.

Not 2 per cent. profit last three years on agriculture.

In this, the northern portion of the state, the profits of well conducted farms for the ten years preceding the last three were very large; should think not less than 10 per cent.

During most of the period above alluded to, produce was very high; wheat was worth from \$1 to \$2 per bushel; corn from 4s. to 12s. per bushel; other grain proportionably high. For the period of three years, since 1842, wheat has ranged from 50 to 65 cents; corn from 1s. to 3s. per bushel; other grains alike low.

John F. Reed, Jeffersonville: There are 13 cotton manufactories, with a capital of \$160,000; tobacco, number not known, capital \$70,000; 426 tanneries, capital \$400,000; 600 saddleries, capital \$270,000; 40 woollen, capital \$90,000.

The quantity of wool raised in this state is about one and a half millions of pounds.

13. ILLINOIS.—Returns several, of which we shall give substance. ~~It~~ produces wheat, corn, oats, tobacco, hemp, flax, grain, pork, ~~and~~ ~~also~~ ~~produces~~ agriculture, 2 to 4 per cent., formerly 5 to 10. Mines of ~~and~~ ~~iron~~, ~~copper~~ and coal; first named produced extensively.

Products of state, 1845, \$60,000,000 from wheat alone; \$10,000,000 as an exportable surplus. Raises full supply of hogs, horses, cattle, &c. Exports lead, whiskey, flour, pork, beef, wool, &c. But few manufacturing establishments in the state. Little ship-building or navigation; little commerce.

14. MICHIGAN.—M. Hinsdill: Agricultural products exported, wheat and wool; ten factories of wool in the state, none extensive; large number of small furnaces for making ploughs, &c.; two or three manufacture steam engines. State builds large numbers of vessels for navigation of lakes; no mines except those of copper on Lake Superior.

15. MISSOURI.—Thos. Gantt; Products, large quantities of tobacco, hemp, wheat, Indian corn, and oats; little cotton, and no rice. Besides these immediate products of the soil, pork and beef are grown in great quantities. There are manufactories of tobacco, iron, queens-ware, sugar-refining, and a cotton factory at Hannibal. Boat-building has engaged some capital of the state.

For the last three years the profits of the best conducted farms, and those most favorably situated, have been about 5 per cent. This is about the *maximum* of profit. In many cases the profits have been from 2 per cent. to nothing.

During the greater portion of the previous ten years, fair profits upon the capital employed were realized—say from 5 to 15 per cent.

Mines of lead have been long worked, but in an unscientific manner; but enlightened capitalists are now improving this interest, and the quantity sent to market from this state is rapidly increasing. For the last six years the price has been from \$2 to \$3 50 per cwt.

16. ARKANSAS.—No particulars.

17. WISCONSIN.—Various answers: Produces wheat, corn, rye, oats, vegetable wool, and some tobacco. Exports nothing but furs and peltries; has a few small woollen factories; lead and copper mines; no exportations of agricultural produce before 1842; raises sufficient supply of horses, mules, hogs, and small surplus of bread-stuffs. Wisconsin produces principal portion of the lead of the Upper Mississippi; Galena and Potosi points of shipment; net profits of agriculture 2 per cent. on best lands. Income per hand clear from 1836 to 1839, \$100; 1840 to 1841, \$25; 1842 to 1844, \$10. Wisconsin has four or five iron foundries; as many tanneries; two or three woollen factories on a small scale.

18. IOWA.—No mines except lead. These yield annually about 4,000,000 lbs. of lead, obtained by the labor of between five and six hundred men, requiring no great capital besides. Lead sold for \$2 per 100 lbs. from 1833 to 1835; from 1835 to 1837, at about \$4; from 1837 to 1842, at \$2 50; and at an average of \$3 per 100 lbs. from 1842 to the present time. The high price of 1836-'37 was chiefly caused by an inflated paper currency; and the present advanced price is caused by the great demand abroad.

Although lead brings \$3 per 100 lbs. at present, it is known that those engaged in its production are not as well paid for their labor as any other class of men in the country; and, in proof of this assertion, submits the following estimate made out by several of our most experienced and practical miners:

Capital invested, \$50,000, at 6 per cent. per annum.....	\$3,000
500 laborers for one year, at 75 cents per day, say.....	112,500
Powder, tools, candles, &c.....	37,500
Total cost of producing.....	153,000
4,000,000 lbs. of lead, at 3 cents per lb.....	120,000
Annual loss to producers.....	\$33,000

Or, after deducting the actual expense, tools, interest, &c., it will leave a net product of \$80,500 to be divided among 500 men, or \$161 each per annum, out of which they pay for boarding about \$78; leaving but \$83 as the earning of each working man for one year, or less than 28 cents per day.

Art. IV.—THE SWORD AND THE OLIVE BRANCH.*

J. D. B. DE BOW, Esq.:

ESCHEWING politics, you will not expect from me an essay, to disturb the even tenor of your Magazine, in its march of Commerce, Literature and Science. Abhorring factions, I would not scribble a line to favor one, or put down another. Therefore, in defending a great commander in his opinions of his rights and the dignity of his office, I shall touch only upon a branch of the military art which can give no offence to any one.

To the commander-in-chief, in an offensive campaign, the sword is consigned, with some general object of the war, its lines, &c. To go with him into minute details, is not only harassing, but vicious, and he would be defended by the example of Prince Eugene, in returning to the Aulic Council, at the end of the campaign, their despatches unopened. Killing is not the object of war, but impressions made upon an enemy and its territory to reduce its strength, and to abate its inclinations for prolonged contest. Hence, the Sword has a better office than slaughter. The Olive Branch may effect more than steel and bullets, opportunely offered or accepted. To deprive a commander of this branch, is excluding him from a main road to victory. Minerva would not have carried off the crown from Neptune, in the judgment of the gods, if the olive tree had no signification but its berries. Our American Eagle would be less one arm, if the olive branch should be snatched from its talons. The

* This paper is from the pen of a military gentleman of high character in Louisiana, and is interesting in many respects, without offending against any of the rules of our periodical.—[Ed.]

right claw holds the branch, and the left the darts, which furnishes an apt illustration of its character. Now, if the chief represents the war eagle of the nation, to give him on his banner a bird of one leg, would not represent the Bird of Jove, nor the power of the Republic, nor the might of the commander-in-chief. No general would march with such a banner, nor would his troops rally under or around it. "*Vincere facem*" could not be intended under such a flag, nor would "*facere pacem*" be concluded under the influence of its stars or stripes.

Hannibal, during 17 years in Italy, represented Carthage, and carried no separate civil commissioner amidst his ranks.

Cæsar, in his Gallic campaigns, marched as he pleased, and treated according to his tastes, fighting and making peace, subduing, or making allies and tributaries, and no civil commissioner would have dared to show his face near the eye of Cæsar, or beside his victorious legions.

If the son of Hamilcar had a Hanno for his enemy at Carthage, and the Great Julius had his Pompey at Rome, neither they nor their subalterns, in regular pay, or private hire, would have dared to exhibit themselves in the fields of contest.

Let us now see how, in modern times, Bonaparte managed this thing in the fields of Italy. I quote freely from the memoirs, as it is most proper to use the General's own language. Bonaparte said: "The alliance of France with Sardinia is like that of a giant embracing a pigmy; if he stifles him it is against his will, and merely owing to the extreme difference of his organs." The Directory was not willing to comprehend the wisdom and profundity of this policy; it authorized the opening of negotiations, *but threw obstacles in the way of their conclusion.*

When Mantua opened its gates, Bonaparte (marching on Tolentino, to *dictate* the terms of peace to the Holy See, and place himself in a situation to march on Vienna) perceived the importance of bringing the affairs of Piedmont to a close, and authorized General Clark to negotiate with M. de Saint Marsan, a treaty. Here we read *dictate*, which is conquering a peace in earnest. The commander appoints a commissioner. Had General Bonaparte the powers? He did not ask for them, and did not care to ask. They belonged to him in his office of military commander, and he appointed negotiators to follow his instructions.

In another part of his Memoirs we read:—Napoleon had no need of this increase of difficulties; he was already menaced by Alvinzi, whose troops assembled in the Tyrol, and on the Piave. He *reproached* the French Directory with having left him ignorant of negotiations, which he alone was able to direct. Had he been appointed to direct them, (as ought to have been the case,) he would have delayed opening them for two or three weeks, in order to have received sixteen millions due from the Holy See, by virtue of the armistice of Bologna. The government acknowledged this, and invested him with authority to remedy its blunders if possible. He directed the French agent to disown, confidentially, all the spiritual

part of the negotiations of Paris and Florence; to intimate that the General was entrusted with the negotiation; and that neither the Commissioners nor the Directory had anything to do with it, but the General alone. These overtures produced a good effect. To make a greater impression, the General went to Ferrara, alighted at the house of the Cardinal Mattei, archbishop of the city, and had several conferences with him; he convinced him of his good intentions, and got him to set off for Rome, to carry words of peace directly to the Pope. A few days after, the battle of Arcole put an end to all the hopes which had been raised in Italy by Alvinzi's army. In a few days Napoleon re-passed the Po, and proceeded to Verona. The battle of Rivoli destroyed forever the hopes of the enemies of France. Mantua opened its gates. A small Gallo-Italian army marched on the Appenines. All disputes with Rome were settled by the Treaty of Tolentino.

The Directory sent instructions to General Clark to sign a treaty, on condition, &c. These were not approved by Napoleon, who thought that the Republic had a right to regain the limits of the Rhine, and a state in Italy, &c. Three months after, Napoleon signed preliminaries, on condition of the limits of the Rhine, with the fortress of Mentz, and the existence of democratic republics in Italy—communicating with Switzerland—barring all Italy from north to south—from the Alps to the Po—surrounding Sardinia, and covering middle and lower Italy. In case of necessity, the French armies, debouching by Geneva, Parma, Modena and Bologna, would at once reach the Piave, after turning the Mincio, Mantua and the Adige. This would secure the kingdom of Sardinia and the states of the Church, and Tuscany, and the kingdom of Naples.

The French army resolved to pass the Julian Alps, and to march on Vienna. Such is the contrast between the genius of Napoleon, and the Directory and Clark combined. Such will always be the contrast between a skilful commander-in-chief, and cabinets and civil commissioners.

The battle of Tagliamento, of Tarwis, of Geritz, and the entrance of the Italian army into Klagenfurth and Layback, astounded Vienna. The armies of the Rhine and the Moselle, and the Sambre and Meuse, were to have opened the campaign, and passed the Rhine on the same day that Bonaparte passed the Piave, and were to advance into Germany. The government, on the 23d of March, wrote to the General, complimenting him—stating why the armies of the Rhine had not taken the field, and assuring him that they would march without delay. But three days after, the Ministers wrote that Moreau's army could not effect the passage of the Rhine for want of boats, and that the army of Italy must rely upon itself alone. Was the Directory fearful that these armies, if united under one General, would make him too powerful? Napoleon, thus fettered, and not having sufficient cavalry to descend into the plain of the Danube, ~~thereby~~ ^{therefore} he might advance to the summit of the Simmering, and use ~~his position to conclude a peace.~~ ^{his position to conclude a peace.} He wrote to Prince Charles as follows:—*These brave troops carry on war they wish for peace.*

Have we not killed men enough, and inflicted sufficient misery on the human race? Humanity calls loudly upon us. Europe has laid down the arms she took up against the French Republic. Your nation alone remains; yet blood is to flow more copiously than ever. Fatal omens attend the opening of this campaign. Whatever be its issue, we shall all kill some thousands of men on both sides; and after all we must come to an understanding, since all things have an end, not excepting vindictive passions. You, General, whose birth places you so near the throne, and above those petty passions which often actuate ministers and governments, are you disposed to merit the title of benefactor to the whole human race, and the Saviour of Germany? Do not imagine, sir, that I mean to deny that it may be possible to save Germany by force of arms; but even supposing the chances of war should become favorable to you, the country would nevertheless be ravaged. For my part, General, if the overture I have the honor to make to you should only save the life of a single man, I should feel more proud of the civic crown I should think I had thereby merited, than of all the mournful glory that the most distinguished military success could afford."

Prince Charles replied: "Most certainly, General, whilst I carry on war in obedience to the call of honor and duty, I am as desirous as you are of peace, for the sake of the people and humanity." The Prince declined, fearing to assume the responsibility, and concludes: "But whatever may be the future chances of war, or the hopes of peace, I beg you to be convinced, General, of my esteem and peculiar consideration." In order to support this overture, the French general marched forward to approach Vienna. After the battle of Unzmarkt, the army met with no other resistance, and its van reached Leoben. Lieutenant-General Bellegarde, and Major-General Merfield, presented themselves before the French general with a flag of truce, and desired an armistice for ten days. The French general replied, "that a suspension of arms in the military position of the armies, is wholly prejudicial to the French; but if it is to prove a step towards peace, he would consent to their wishes." The armistice was to expire in five days, but it was prolonged to seven days longer—a measure important to the French. General Clark, with full powers, was at Turin. As it required time for him to reach head-quarters, Napoleon took the responsibility (as on many other occasions) and signed the treaty with Merfield and Gallo. The limits of the Rhine were granted to France. The Oglio was to limit the Austrians. The French armies gained the Cisalpine Republics of Lombardy, Modena, &c., and Venice, and could communicate from Milan to Venice by the right bank of the Po, and debouche on the Piave, and disregard the lines of the Mincio, the Adige, and Mantua. Napoleon might have entered Vienna, but this would have produced no good effect, as he could hardly maintain himself there, the armies of the Rhine being unable to take the field. The Councils and Directory were at variance; there was difference among the directors themselves, and Moreau wanted money to organize his pontons. The directory had authorized General Clark

sign much less advantageous terms. Napoleon, therefore, signed the *preliminaries*.

Hoche commanded the army of the Sambre and Meuse, and crossed the Rhine at the bridge Neuwied, attacked Kray, and compelled him to fall back on the Maine. Hoche arriving before Frankfort, hears, through the Austrians, of the treaty of Leoben—assumes Friedburg for head-quarters, and occupies the Nedda and Wetzlan. Moreau was at Paris soliciting pontons; but Desaix, who commanded *ad interim*, finding that Hoche was engaged, crosses at Kilstett; Moreau comes up; the Austrians are beaten, and the General halts, hearing of Leoben. Hostilities did not commence on the Rhine until eight hours after the treaty of Leoben had been signed, and Napoleon received the intelligence seven days after. Why was not the campaign commenced sooner, and why had the Directory written that the co-operation of the armies of the Rhine was not to be reckoned upon? “But (says Napoleon) the affairs of the war were conducted without energy or talent, (meaning the civil part of the affair,) and the administration was *corrupt*, and never produced any satisfactory result.”

Hoche was young, full of talent, bravery and ambition, had a superb army of 80,000 men under his command, and burned to imitate the deeds of the army of Italy. The army of Moreau was large, and well composed. Desaix would have done better, as he loved glory for glory's sake, and France above everything. He was unsophisticated, active, of a pleasing character, and of extensive information, and had perfectly studied the theatre of war upon the Rhine. Besides, he was attached to General Bonaparte, and was not eaten up by the jealousy which devoured Moreau. Bonaparte had but 43,000 men, and 120 pieces of cannon. What could the Directory design by keeping these armies asunder, and leaving Bonaparte to operate singly? The General of Italy charged that ministry with *corruption* and *imbecility*, as the best and only answer!

Let us now advance to the peace of Campo Formio. The real object of General Clark's mission was not to open a negotiation, but to act as secret agent of the Directory at head-quarters, and to watch the General, whose victories began to give umbrage. Clark's genius was not military; he was an *official* man, *exact* and *upright* in *business*, and a *great enemy of knaves*. Napoleon was glad that the government employed a man who was known, rather than subaltern agents, who pick up the most absurd information in ante-chambers and taverns. Napoleon employed Clark in several negotiations with Sardinia, and the princes of Italy. After Fructidor, he defended him warmly, not only because he had gained his esteem in a delicate mission, but because it became him to grant protection to a man who had been in daily communication with him, and of whom he had no ostensible cause to complain. Conferences began at Udine. General Clark alone attended on the part of France. Napoleon declared he would not attend unless the Austrian ambassadors were sincerely desirous of peace. Napoleon went to Montebello and Milan. Clark being recalled, Napoleon was now the only commis-

nioner on the part of France. Count Cobentzel and three other commissioners represented Austria. The moment the Austrian negotiators were convinced that they could only obtain peace by adhering to the terms proposed at Montebello, the treaty could have been signed, had not the Directory changed its policy. *Since the affair of the 18th Fructidor* they thought they might *require from the nation new sacrifices*.

They contrived intimations to Napoleon, calculated to induce him to break off the negotiations and recommence hostilities, whilst the official correspondence was still dictated in a spirit of peace. It was evident they wished for war, but were anxious that the *responsibility* of the rupture should rest entirely with the *negotiator*. When they perceived that this plan did not succeed, and when they believed their own power was established, they sent their ultimatum. Napoleon had fixed ideas respecting the degree of obedience which he owed to his government. With respect to military operations, he thought it his duty to execute his orders so long as they seemed reasonable and likely to succeed. His ideas respecting the degree of obedience due from him as plenipotentiary, were not so well settled. Could he renounce his mission in the midst of a negotiation, or thus hazard its results, by executing instructions which he did not approve, and which would result in war? But his principal character at Passeriano was that of general-in-chief. He resolved to sign the peace on the terms settled at Montebello, which, *before the 18th Fructidor* had been *approved by the Directory*. Count Cobentzel required, he said, "the Adda as a boundary, or nothing." Austria yielding Belgium and Lombardy, Mentz, four departments of the Rhine, Savoy and Nice. They therefore insisted on the Thalweg of the Adda. They were forced to reduce their claims to the line of the Mincio. This, said Count Cobentzel, is our ultimatum. The conferences were held within hearing of the drums. Count Cobentzel remained immovable; his carriages were got ready, and he announced his departure. He said that the French negotiator would be responsible for all the blood that would be shed in this new contest. Upon this, Napoleon, with great coolness, although much irritated by this attack, arose, and took from a mantel piece, a little porcelain vase, which the Count prized as a present from the Empress Catharine, "Well, (said Napoleon,) *the truce then is at an end, and war is declared*; but, remember, that before the end of autumn, I will shatter your monarchy as I shatter this porcelain." Saying this, he dashed it furiously down, and the carpet was covered with its fragments. He then saluted the Congress, and retired. The Austrians were struck dumb. A few minutes afterwards they found, as Napoleon got into his carriage, he had despatched an officer to the Archduke Charles, to inform him that the negotiation was broken off, and that hostilities would recommence in twenty-four hours. Count Cobentzel, greatly alarmed, sent the Marquis de Gallo to Napoleon, with a signed declaration, that he consented to the terms of the French General. The treaty was *dated* at Campo Formio, a small village, which had been neutralized for this purpose by the

Secretaries of Legation, but signed at Napoleon's head-quarters, at Passeriano.

I doubt if Clark, or any one else, could have exhibited more firmness or diplomacy than the commander-in-chief of the army of Italy. I doubt if Mr. Trist, or any one else, could have made as good a treaty, or as promptly, as the general-in-chief of the army of Mexico, looking to "*indemnity for the past, and security for the future.*"

If I have not said enough to fortify my original position, I have not leisure to say more. But, perhaps, this essay, if studied in the right spirit, will prove pregnant enough.

Hereafter, if subjects of this sort are not unsuited to a magazine, which hangs up King Commerce for its motto, you may hear again about boundaries, &c., from your correspondent, H.

ART. V.—THE BRITISH COLONIAL EMPIRE.

THE following graphic sketch of the British Colonial Empire, on which, it has been well said, the sun never sets, we extract from the first number of that able London publication, the Colonial Magazine, which we have often commended to our readers. This sketch will be followed up, at an early day, with another by ourselves, showing the extent of the trade, population, area, etc., of all these provinces, and their importance to the mother country.

We will start with BRITISH INDIA. With that Hindostan will we begin, which, out of a population of one hundred and forty millions of human beings, has ninety millions subjects of Great Britain, forty millions of the subjects of allies, protected however by the British Government, and greatly dependent upon British support, and with but ten millions of subjects of independent states.

Where the Jumna and the Ganges, two rivers destined to give grandeur and fertility to the plains of Hindostan, burst from beneath the eternal snows which no mortal foot hath yet trodden, still in the most elevated recesses of the mountains, Britain has her empire, and the soil is her own. In that India which was one of the earliest seats of civilization, laws, the arts, and of all the improvements of social life, there are we now omnipotent. In that India which is an epitome of the whole earth, extending from the 8th to the 34th degrees of north latitude, and from the 68th to the 92nd degrees of east longitude, which from north to south is no less in length than 1800, and from east to west 1500 miles, there are we! It has regions that bask beneath the brightest rays of a tropical sun; and others, than which the most awful depths of the polar world are not more dreary. In its vast plains, which present rich double harvests, luxuriant foliage, and even the burning deserts of the torrid zone; in its low heights, enriched by the fruits and grains of temperate and mellow climates; on its upper steepes, clothed with the vast pine forests of the north; and even on the highest pinnacles of its loftiest regions, buried beneath the perpetual snows of the arctic zone;—*even there are we!* On the great plain of India, between the Brah-

maspoutra and the Indus, reaching across from the great chain of mountains to the high table land of the southern peninsula, 1500 miles long, and from 300 to 400 broad, there does British influence exist, and there also is the British name respected and revered. Along that plain where the Ganges pours a continually-widening stream, and where the power of vegetation is so great as to render it an entire field of waving grain,—there are we! Where in the east, on the hilly shores of Malabar, the aromatic gales perfume the air of the Oriental Isles—there our name, our power, our good faith, are known, acknowledged, and felt. Where the rice, the opium, the indigo, the cotton, grow in the greatest profusion;—there are we! Where nature ever riots in unbounded luxuriance, and covers whole tracts of country with dense, dark, impenetrable masses of foliage and vegetation; crowded and twined together; with trees spreading on all sides their gigantic arms; with thorny and prickly shrubs of every size and shape, and with canes shooting in a few months to the height of sixty feet;—there are we! And where in the open plain the banana and other single trees, when full scope is given to their growth, spread out into the dimensions of a considerable forest;—there are we! Amid the wilds of India, where tall and majestic forests of pine, larch, spruce and silver fir, cypress and cedar grow, flourish and decay, still there we are, the owners of the soil, and either the governors of the people, or their protectors and friends.

Where the fruits of the earth luxuriate in abundance and perfection; where the wild rose, the lily of the valley, and the cowslip burst through the green carpet; where the chamois bounds from rock to rock, and the forests are filled with deer and with musks; where the peacock displays his glittering plumage on the lower hills; where the sovereign eagle is descried amid the cliffs; where the bold hawk and the roving kite prey upon their dependents and their victims;—there are we!

In the valleys of the Sutledge and the Jumna; amidst perpetual snows, where, beyond a succession of lofty eminences, a central mass of an enormous chain of mountains exists; by the side of the cata-racts which dash down dark ravines unsung by poets, and as yet unpainted by the pencil of man: in those bright and beauteous groves, or in the woods and forests where the gibbon, the wanderoo, the ichneumon, the pangola, the rhinoceros, the nyl-ghau, and the gayall are to be found; and where the finch falcon of Bengal, the hawk owl of Ceylon, the bulbul, the honey-sucker, the coromandel, and the gigantic stork walk or fly abroad at liberty and in happiness;—there also are we!

Napoleon once said that "England was a nation of shop-keepers!" We meet the foul libel by pointing to our Indian colonies! A nation of shop-keepers, indeed! What! was that a nation of shop-keepers—a few of whose merchants with a handful of troops struggling against European rivalry, subdued all the states which had sprung from the ruins of the Mogul Empire, and became the arbiters of the destiny of one hundred and forty millions of human beings placed

the opposite extremity of the globe? Was that the effort of men who count coppers on counters, and speculate on short weight and inferior goods for their profits and their fortunes? No! No! the conquest, the retention, the aggrandisement, the improvement, the continued rule and yearly advancement of such a dependency as this, is too mighty a monument of British courage, zeal, perseverance, science, and wisdom, ever to be forgotten in the history of the world!

Next in importance to the East Indian possessions of Great Britain, are those of the West Indies. There is JAMAICA, that "island of springs," with its four millions of acres—with its blue mountains towering to nearly 8,000 feet above the level of the sea—with its dense woods offering a marked contrast to the lower ranges—with its coffee, pimento, cotton, and capsicums—with its numerous ravines and savannahs—with its springs, its harbors, its ports, its beautiful bays, its rich mines, its fine sugar canes, its coffee plants in the mountains, its dye stuffs and spices, its arrow-root and cassia. There the bread-fruit tree, the plantain, the banana, the shaddock, the tamarind, the guava, and the star-apple all arrive at perfection.

There is TRINIDAD too, presenting one of the most magnificent, variegated, and richly luxuriant panoramas that nature ever formed. The waves of the mighty Orinoco dispute to the east for the empire of the ocean with contending billows, whilst the lofty mountains of Cumana rise from the bosom of the horizon in stupendous majesty. The fecundity of the soil, its gigantic and magnificent vegetation, its beautiful rivers, enchanting slopes, forests of palms, groves of citron and forbidden fruit, and hedges of spices and perfumes—its fine azure skies, deep blue seas, fertile glades and elastic atmosphere, have obtained for Trinidad the title of "the Indian paradise."

There is TOBAGO, once the abode of the Caribs, and named after the first tobacco pipe of the island. It offers a strange contrast to "the Indian paradise," for it is termed the "Isle of Melancholy." At some former period it formed a bold promontory of main land, from which doubtless it was violently dissevered. Though less picturesque than some islands, the fig-tree and the grape yield their fruit twice a year, and the cinnamon and pimento grow wild in different parts of this curious isle.

There is GRENADA, the most southerly of the Antilles, once a favorite possession of the French; with its mountainous and picturesque scenery, its successive piles of conical hills, its vast forest trees and brushwood, its splendid mount St. Catherine towering to a height of 3,000 feet, its basaltic rocks, its wondrous cliffs, and its fine cocoa, sugar, and coffee plantations. There is the pretty group of Grenadines or Grenadilloes.

There is St. VINCENT, the most beautiful of the Caribbee isles, with its bold, sharp, and abrupt mountains, its deep intervening romantic glens, and its lofty and rocky coasts. The delicious valley of Buccament is the admiration of all travellers. The famed botanic garden is the theme of general praise; and the island stands high in reputation as a healthy station.

There is **BARBADOES**, the land of luxuriant fig-trees, and the territory of once as brave a people as ever breathed, with its beautiful bay of Carlisle, and noble square with the statue of Nelson; and there are also the remnants of those primitive forests which formerly covered the whole island.

There is **ST. LUCIA**, with its sugar-loaf rocks, its fantastic-shaped mountains, its lovely little coves and bays, fringed with luxuriant cane fields; its flotilla of fishing and drogher boats, and its stately trees clothing its noble mountains.

There is **DOMINICA**, with its lofty rugged acclivities, its fertile valleys, watered by thirty fine rivers—its umbrageous canopy of lofty and magnificent forests, and its romantic and picturesque cascades. The mountains are sulphurous and volcanic; its lofty table rock, **Morne Bruce**, is one of the finest in the West Indies; its rich parterres of green coffee perfume the whole atmosphere, and its grand savannah is the delight of all who enjoy the murmuring cascades of bubbling brooks which break through the luxuriant vegetation, or roll along the hilly avenues surrounded by piles of rocks, black, bare, or green with countless tracteries of lovely creepers, gigantic ferns, and lofty palms.

There is the fertile island of **ANTIGUA**, with its bays and harbors wholly unrivalled in the West Indies, with its bold and precipitous hills, its innumerable fruits, its aromatic spices, its productive gardens, and its groves of trees of beautiful and refreshing verdure.

There is the delightful little island of **NEVIS**, the mother of the English Caribbee Isles. It is a four-mile mountain, yet as green as heart can conceive, perfectly cultivated, and with a forest of ever-greens like a ruff round the neck of the high land.

There is **MONTserrat**, the Montpelier of the west, with its elastic and healthy atmosphere—its majestic, picturesque, and lofty mountains, and its truly charming and bewitching scenery.

There is **ST. CHRISTOPHER**, (or **St. Kitt's**), with its layers of volcanic ashes, its bracing air, its healthy inhabitants, its awful crag of **Mount Misery**, and its exquisitely beautiful vale of **Basseterre**.

There is **TORTOLA**, whose harbor has afforded shelter in time of war to 400 vessels waiting for convoy.

There is the eel-like **ANGUILLA**, with its little wall of cliffs rising from the beach and protecting a flat and uninteresting surface, but yet producing annually three million bushels of salt from its salt lake; and sugar, cotton, maize, and cattle in comparative abundance.

There are the **BAHAMAS**, a group of several hundred islets, evidently the work of the coral insect, which, with all its apparent insignificance, has created many beautiful and habitable spots for the dwelling and culture of man. In these numerous isles there are 400,000 acres granted to cultivators, and nearly two millions and a half vacant or unoccupied.

And there are **THE BERMUDAS** or **Somers' Isles**, exceeding 300 in number, lying like a shepherd's crook, in the Atlantic ocean, with their coral reefs and shoals, their small cedar groves, their green-clad

hills; and that north rock, placed by Nature, or rather by the God of Nature, as a beacon which seems to say, "Hitherto mayst thou come," thou mistaken, billow-tost, deceived, and luckless vessel, "but no further." The Bermudas are the Gibraltar of our West Indian Colonies, and it was therefore that our American enemy, Washington, desired to annex them to the republic, and to make them a nest of hornets to annoy the English commerce.

Yes, there are we; amidst this variegated scenery, these mixed populations, these multiplied products of the West India Islands. There are we, who found the population uncultivated, indolent, ignorant, miserable slaves; and who have rendered them instructed, happy, enlightened, and free citizens. We have doubled the amount of productions by our superior cultivation; we have made their minds, by instruction, as productive as their soil; we have increased their staple products to such an extent, that their exports are now most important; and we have, in nine cases out of ten, so changed the indigenous characteristics of the people, as to have transformed them from dulness, stolidity, and soporific indolence, to comparative activity, brightness, and competition. To the charge that we rendered the Africans, slaves, we reply at least with triumph and with truth, that we have purchased their freedom. Yes, noble land of the brave and the good, we can look to our West Indian Colonies with gratitude, dignity, Christian joy, and honest pride; and as the once-captive race point to their broken chains now scattered around, we can say, "Thank God, we bought their freedom." *

Turn we now to SOUTH AMERICA, and to our colonies in that quarter; and the first which presents itself is BRITISH GUIANA. There, on the vast rivers of Essequibo, Demerara, and Berbice, we have possessions which cover an area of one hundred thousand square miles. There its fine savannahs are occasionally interrupted by hill and dale scenery; but the general appearance of the country is similar to the territory of Belgium. Sugar and cotton grow in abundance; and in some districts, though never manured, a single acre has produced 6,000 lbs. of sugar in one year. In other districts, coffee is not only abundant, but of excellent quality. Although the climate has hitherto been considered one great objection to any vast amount of colonization in that portion of our possessions, yet exercise and temperance are, as elsewhere, the great safeguards to health.

The British settlement of HONDURAS, in Central America, extends along the coast for an extent of 270 miles. That coast is studded with green isles, and the town of Belize is by no means insignificant. The mahogany tree, and logwood, cochineal, indigo, and sarsaparilla, are the great staple produce of Honduras; oranges, shaddocks, melons, pine-apples, and cocoa nuts, are also abundant. Deeply is it to be regretted that the country is not divided into parishes, and that

* Our friend of the Colonial Magazine may be allowed his innocent enthusiasm here, but we think as little as possible ought to be said in England about that "emancipation bubble," which has been such a farce before high heaven. Our readers will refer to *Commercial Review*, Vol. V. p. 475, in proof.—[EDITOR.]

emigration to that portion of our settlements is not encouraged. Its pine-wood alone would richly compensate all engaged in its cultivation.

The FALKLAND ISLES are no less than ninety in number, and the two largest are each nearly one hundred miles in length and fifty in breadth. Though the weather is seldom settled, yet the climate is temperate, and vegetation rapid and productive. There is heard the gentle note of the grebe, and the falcon and the heron are by no means rare. There, too, herds of wild cattle would maintain vast numbers of settlers, and the upland geese would delight, by their flavor, even a London or a Parisian gastronome.

Our possessions in NORTH AMERICA merit a longer and more attentive consideration. First in order of importance comes what was formerly LOWER CANADA. The late settlement of the Maine frontier question has deprived us unquestionably of one of the finest sections of our North American territory, but it is still sufficiently extensive to support in comfort and happiness tens of thousands of our depressed and emaciated agricultural population. Two hundred thousand square miles of territory, with three chief districts—Quebec, Montreal, and Three Rivers—and two of an inferior extent—Gaspé and St. Francis—ought to be far better cultivated and much more thickly populated than they are at present. And are not the natural features of Lower Canada extremely picturesque? Are there not ranges of mountains, noble rivers, magnificent cascades, lakes, prairies, farms and forests, alternating in every direction with sudden and beautiful variety? Who that has seen the eastern parts of the river St. Lawrence, with the high and mountainous districts about it, can forget the noble forests which everywhere meet the eye, and which are lost only in the clouds! And who can forget the Alleghanies, rising abruptly to the lofty elevation of 4,000 feet above the level of the sea? Of cities and towns there are sufficient to assure the minds and remove the fears of settlers; for are there not Quebec and Montreal? And though the winter be somewhat longer than our own, its fine season begins in May and continues until November. When last the census was taken, in seventeen counties there were upwards of 4,100 townships, and a population of nearly 500,000 souls. What forests of timber there invite the industry and the activity of our broad shouldered and strong-limbed foresters! How many a man whose family now scarcely exists upon the wholly inadequate wages of the mother-country, would there be abundantly compensated for his labor and his toil!

If from Lower, we turn to the position of UPPER CANADA, what a vast territory do we behold embraced in that extensive province! Who can even think of the Ottawa River—of the Lakes Ontario, Erie and Huron, without strongly feeling what sources of riches are there, in primitive forests as yet untrodden by the foot of civilization? The lakes alone fill us with surprise. Lake Superior is 541 miles long, by 140 wide; and Huron, Erie and Ontario, are from 180 to 250 miles in length. The infant capital, Toronto; Kingston, hitherto the seat of government, with its fine position, but little

inferior to Quebec and Halifax; the Rideau Canal, the Welland Canal, the Granville Canal,—all are works of interest to those who exclaim with delight as we do, when their eyes pass over in succession the various nations of the earth, “Yes, there also are we.” And when we think, too, that the people of Canada are among the most favored of the earth, having peace, liberty, security and abundance—a fertile soil, a beautiful climate, and an almost total exemption from burthens of any kind, how can we do otherwise than desire that swarms of our manufacturing, mining, and wandering poor were there, enjoying at least the comforts, if not the luxuries of life?

Thank God that some districts are colonized by Highland and Lowland Scotchmen, whose prudent, thrifty, hard-working characteristics have fitted them for emigration. There are upwards of eighteen acres of rateable land to each human being, and not more than two acres cultivated. And when it is known that even there, where the advantages are so great, that the proportion of hands cultivating 57,000 acres is as twenty acres to each person, is it not just and right, that we should desire that multitudes of our own starving population should there be transplanted to labor with diligence, but to be well rewarded for their toil?

NOVA SCOTIA is situate between the parallels of 43 and 46 north latitude, and the meridian of 61 and 67 west longitude. It is 280 miles long, embraces upwards of 15,000 square miles, and nearly ten millions of acres. The harbor of Halifax is the admiration of the world, and from its situation being directly open to the Atlantic, and its navigation scarcely ever interrupted by ice, is our chief naval station in North America, and affords safe anchorage for 1,000 ships. Yes, there also the majesty of Britannia rides triumphant on the wave!

CAPE BRETON and THE SABLE ISLANDS, though forming a part of the government of Nova Scotia, are yet, as it were, a separate colony. They comprise an area of two millions of acres, exclusive of the surface covered by lakes and rivers. How beautiful is the situation of Sydney, the capital, and how enterprising and energetic are the miners! What depths of coal-fields, and what sources of riches are there still hidden! The veins appear to be wholly inexhaustible; and yet, besides all this, timber exists in great abundance, and the fisheries are sources of wealth.

NEW-BRUNSWICK next invites our notice. It contains no less than nearly 28,000 square miles, and about eighteen millions of acres. Behold its bold undulations, its vale and lowlands, its noble forests, its pleasing settlements, its abundant water communications, its fine extended prairies; and yet, fourteen out of eighteen millions of acres still await the British husbandman to turn the soil of this province with British spades, and to rescue millions of the half-starving population at home from misery and death. The province is healthy, old age is frequent, and sober, industrious settlers cannot fail of being happy and contented.

PRINCE EDWARD'S ISLAND is no large possession, containing an

area of 1,360,000 acres, or 2,134 square miles; but it is delightfully situated for commerce, agriculture and the fisheries. It is a pastoral country: picturesque, admirably adapted for cultivation, and so healthy that many persons live even to one hundred years of age, without ever knowing a day's illness! There, however, the fisheries have been neglected, and hundreds of the famishing fishermen on our eastern and northern coasts would find in the herring fishery of Prince Edward's Island, means for a profitable and satisfactory existence.

NEWFOUNDLAND AND THE LABRADOR COAST are likewise under British dominion, and owe a loyal obedience to our Queen Victoria. Newfoundland is not less than 420 miles long, and at its greatest breadth 300 miles. Little is known of the interior of this vast island; but it would doubtless well repay the toil of those who should decide on exploring it. The longevity of the inhabitants is the best proof of the salubrity of the country. Old fishermen of 90 years of age will be frequently seen, actively occupied in the arduous duties of their calling. How astonishing is British industry and British enterprise! Look at Newfoundland for an example of this! There, in a land certainly "unknown to song," there are nearly a million cwts. of dried cod prepared and exported annually, and from 400,000 to 500,000 seal-skins likewise sent to foreign shores in the same period of time.

THE HUDSON'S BAY TERRITORIES occupy no less an extent than four thousand miles. True, the human race is but scanty in this immense region; but the Hudson's Bay Company's settlements are commercially important, and furs are the chief object of their profitable trade.

These are our North American colonies. If the government of this country would direct its mighty energies to their gradual but steady colonization, what beneficial advantages would result, both to the colonies themselves and to our rapidly-increasing, and only partially-employed, home population!

If we turn to that EAST with which we commenced this view of our Colonies, we shall find, in addition to India, which we have already noticed, the large ISLAND OF CEYLON—containing a superficial area of nearly 25,000 miles—but of great importance in all its resources of trade and commerce. There, lofty mountains run in continuous chains, with the most lovely valleys the sun ever shone on, between them. There, the hills are clothed to the very summits with gigantic forests, from which issue magnificent cascades and dashing cataracts. There, the lovely valleys, placid rivers, and rippling brooks are fringed with turfy banks, and all the beauteous verdure of the tropics. Ceylon has been aptly called "the Malta of the Indian Ocean." Its commercial capital, Colombo, is a mile and a quarter in circumference, and is well defended. Its maritime capital, Trincomalee, is, as Nelson described it, "the finest harbor in the world." Its climate is salubrious and delightful; its productions, animal, vegetable, and mineral, are profuse and perfect. Its population, both native and European, is healthy, com-

tented, prosperous, and happy. The state of general education and religious instruction could not well be more satisfactory. The population is upwards of a million souls; and its products are numerous and beautiful, valuable and important. And there are we, respected, honored, and beloved!

PRINCE OF WALES'S ISLAND, or Pulo-Pinang, when compared with the mighty Ceylon, of which we have just been speaking, is small indeed; but it is of considerable importance, whether viewed in connexion with the Anglo-Eastern Empire, or separately, as containing commercial stations and political maritime positions. The island is picturesque, vegetation is splendidly luxuriant, and the mountain forests are magnificent. Small villages and Malay topes are scattered over the island amidst spice-groves in the valleys, or on beautiful and romantic sites upon the sea-coast. The harbor of Georgetown is capacious and well defended. The trade of Pinang is very considerable; the population is 60,000; and nature is most rich and luxuriant.

MALACCA and SINGAPORE are also entitled to a distinct notice; but we must hasten to our possessions in AUSTRAL-ASIA, and commence with NEW SOUTH WALES.

This vast island of New-Holland, with a width of 3,000 miles, a breadth of 2,000 miles, a superficial area of more than three millions of square miles, and a coast line of 8,000 miles, is one of those of our possessions, the magnitude and importance of which it is impossible for us, at this distance, adequately to comprehend. The rapidity with which this colony has advanced, is one, amongst many proofs, of its admirable climate, situation, and capabilities. It was not until 1788, that the British ensign was hoisted on the shores of Sydney Cove, then thickly wooded and abounding in kangaroos; but the silence and solitude of the forest were soon broken in upon, by the resounding strokes of the woodman's axe, and a few settlers, imbued with that moral and physical courage which Britons possess in so eminent a degree, have erected its Sydney, its Parramatta, its Liverpool, its Windsor, its Richmond, its Newcastle, its Macquarie, and its Maitland—and month by month its counties within, and its settlements without the boundaries, are becoming increasingly fertile and prosperous. The salubrity of New South Wales is proverbial; the staple products are such as cannot but secure wealth to all engaged in their cultivation and export; the fisheries are varied and valuable, and none of our colonies is so rapidly advancing in population, wealth, and civilization.

WESTERN AUSTRALIA, or SWAN RIVER, was founded by four English gentlemen—Messrs. Peel, Vincent, Schenley and Macqueen. Its origin must be dated from the 1st of June, 1829—a period of little more than fourteen years' distance, and through evil and through good report these gentlemen and their followers have proceeded with energy and industry, in their admirable and successful efforts. The seasons are steady and uniform; the rains return in their set time, and there is no drought in the land. The cattle thrive; vegetable matter is productive; the colonists are constantly

increasing; the staple products are becoming valuable and numerous; and Swan River is at least a promising colony.

Another portion of New Holland has been erected into a British colony, termed **SOUTH AUSTRALIA**. Its site is well selected, its climate decidedly fine, its natural products numerous and of a good quality, and several thousands of Europeans are now occupied in establishing a colony which shall one day justify the honest pride of every Englishman.

The quality of the soil, the extent of navigable waters, and the salubrity of the climate, are all most cheering circumstances to those who take an interest in British colonization.

VAN DIEMAN'S LAND covers an extent of 24,000 square miles, or fifteen millions of acres, and is itself nearly the size of Ireland. The country is mountainous but diversified; the coast is well supplied with bays and harbors. Hobart Town, the capital, is an extensive and well-built place, and its Mount Wellington and Derwent estuary protect and embellish it. Its exports have indeed wonderfully increased in ten years from £14,000 to £420,000 per annum. This is another of those colonies which are satisfactory in their past history, but which present prospects yet far more brilliant—and there are we!

If we turn to **AFRICA**, we shall find that in that continent of the Sun, where it exercises the most power, and appears to be least congenial to the health and longevity of man, still British colonies of a grand and imposing character are to be found. There too are we! In **SOUTHERN AFRICA**, the colony of the **CAPE OF GOOD HOPE** first presents itself to our notice, with a sea-coast of 1200 miles, and an area of 200,000 square miles. Its chains of mountains are magnificent. The capital, Cape Town, has been built along the shores of Table Bay. Its pastures are of a character highly favorable. It is well wooded with large timber, and watered by upwards of one hundred rivers and streams. The soil is fertile, and it has produced three crops of Indian corn in one year. The Boers have of late, indeed, manifested some dissatisfaction with the Colonial Government; but that has been but a temporary evil, and the population is steadily proceeding in the work of a good and permanent system of colonization. The salubrity of the country admits of no question; and the commerce, staple products, and property, are all in an ascending movement.

The **MAURITIUS**, or **ISLE OF FRANCE**, contains 676 square miles, is one of the most picturesque and romantic islands in the Eastern hemisphere, and possesses many bays, arms of the sea, and promontories. Its soil is exceedingly productive; its climate very salubrious; its dependencies numerous and valuable; its population 40,000; and the excess of its revenue over its expenditure gradually improving.

ST. HELENA contains but 30,300 acres, and is alone celebrated as the grave of a man who could never understand the genius of liberty, and who uttered to the last the most unmerited calumnies against Great Britain. The inhabitants are healthy, and about 5000

in number. The climate is salubrious; its soil is watered by clear and wholesome springs; and, before the overland route from India to this country was established, St. Helena was a spot of some note. It is still useful as an English colony, and there can be no question of its abandonment, but it is a heavy annual charge to the mother-country, and its revenue bears no proportion to its expenditure.

ASCENSION is contiguous to St. Helena. It is small, and is of volcanic production: but its turtle is its chief recommendation, except during war, when it is by no means an unimportant possession.

In WESTERN AFRICA we possess that gloomy and unsatisfactory colony, SIERRA LEONE. Let it not, however, be forgotten, that the British colonies on the western coast of Africa are inferior to none in moral, political, and commercial interest. They are, in fact, an indispensable link in the maritime empire of Britain.

GAMBIA, CAPE CASTLE, (celebrated as the grave of the poetess, L. E. L.,) and ACCRA, are likewise to be included in the foregoing remarks; and although we deeply deplore the mortality which from time to time has swept away excellent governors, and admirable merchants and colonists, yet abundant reasons can be supplied why these colonies should never be resigned by Great Britain.

Before we turn to our European colonies we must not forget our new colony of NEW ZEALAND, and our more recent settlement at HONG KONG. With regard to the former, our sway is but modern, and it is divided; recent events have, of course, excited anxiety and apprehension, and we have yet much to do before we can encourage settlers to proceed in great numbers to New Zealand. But climate, soil, natural productions, are all in favor of this young colony, and we shall watch with intense interest its rise and progress. Of HONG KONG we know but little; it is one of the results of our Chinese conquest. Will it be one of the most satisfactory? Is its climate healthy, and suited to our European settlers? This at least appears doubtful. The Chinese evidently regarded it with suspicion, and its cession to England was no proof in its favor. It is by no means impossible that at some future time Hong Kong may be abandoned, and that a new colony may be demanded of the Emperor of the Sun in exchange for that apparently unhealthy settlement.

The British colonies in EUROPE are few, but valuable.

GIBRALTAR is the key to the Mediterranean, and is not the least remarkable possession of the British Crown.

MALTA, and its adjacent island Goza, are the two colonies most envied by Europe. It is not that the length or breadth of Malta is great—nor that its productions are important—or its population numerous,—but it is commanding in its position, acts as a constant sentinel over European powers, preserves the Mediterranean from becoming the seat of conspiracy and intrigue against British interests, and enables us to assert our power, and to maintain our influence, in the south of Europe.

The same observations will apply to the septinsular cluster of the IONIAN ISLES, extending from the Albanian coast, to the southern extremity of the Morean peninsula. The seat of government is at

Corfu; the length of the island is about thirty-five, its breadth about twelve miles, and its climate is nearly tropical. But, besides Corfu, there are Cephalonia; Zante, the glory of the Levant; Santa Maura, a mass of mountain; Ithaca, a shapeless combination of huge rocks; Paxo, with a port of good anchorage, and Cerigo, where Ptolemy was once the lord.

And last,—far, far removed from the spicy groves and aromatic odors, from the glowing scenery and the rich forests of the lands of the mountain and the flood, to which, in these observations on our colonies, we have directed the attention of our readers, is situate, in the North Sea, our colony of HELIGOLAND. There, at only a few miles distance from the mouths of the Elbe, the Eyder, the Weser, and the Jahde, has England placed a sentinel to watch over her commerce and protect her navy. There England has her noble light-house, serving as a beacon to the world; but there she keeps up a good school of pilots, and maintains her supremacy and her glory as still “Mistress of the Waves.” Thus it is, and thus may it ever be, that wherever commerce is to be conducted, trade to be carried on, manufactures to be placed, mankind to be civilized, Christianity to be extended, education to be promoted, and the great family of man to be improved—there are we!

We ought, perhaps, to say something of Fernando Po, of Aden in the Red Sea, and of the Island of Socotra; but these are scarcely entitled to notice, and cannot with propriety be denominated colonies. Some also would include Guernsey, Jersey, and the smaller contiguous isles, as well as that of Man, where the laws and customs are peculiar. But all of these are rather dependencies of the British Empire, than colonies, in the usual acceptance of the term.

We have said enough. To recapitulate even the titles of our colonies, is a source of honest satisfaction and of national pride; and to feel that when we carry to a new settlement the British flag, we at the same time plant the standard of science, the arts, letters, civilization, morals and religion, is a motive for exultation and for joy. But as our influence is great, so are our responsibilities to man, to society, to our colonies, and to Heaven. God forbid, then, that when we point to our northern and our southern, to our tropical and to our arctic possessions, and exclaim, “There are we!” it should be supposed we are indifferent to the conditions on which we are there. No! if we were there as absolute and tyrannical rulers—as masters indifferent to the happiness and prosperity of our dependents—as colonists sacrificing the welfare of the natives to our love of lucre—as nominal Christians indifferent to the moral and religious education of the people—as mere grinding task-masters, hard exactors and strong-headed proprietors of the soil—then most heartily would we exclaim, God grant we may soon be there no longer! But it is precisely because in British ships we export British civilization and liberty—the liberty of time-honored institutions, and of a limited monarchy, that we exclaim right joyously and in all sincerity, as we point to our list of noble and glorious colonies—**YES—THERE ARE WE!**

Art. VI.—THE MERCHANT FLEETS AND NAVIES OF THE WORLD.

“The armaments which thunder, strike the walls
Of rock-built cities, * * * * *
* * * * *
The oak leviathans whose huge ribs, &c.”—BYRON.

EVERY classical reader will remember that famous catalogue of ships from all countries which Homer furnishes us, before the walls of Troy. After the fame of their deeds and the pomp of the enumeration, we are surprised to reflect they were but “open row-boats or canoes!”

The Greek fleet, 600 years later, at Salamis, was but half-decked; the soldiers being stationed on platforms at each extremity, and the middle of the frail boats was left open for the rowers. The vessels composing the expedition of Nearchus into India long afterwards, were row-gallies, capable of being hauled on shore with convenience, and not comfortable enough to allow the mariners to remain two consecutive nights on board!

The Romans began to build their navy on the model of a Carthaginian ship thrown upon their shores; and the vessels were of so large a size when Julius Cæsar invaded England, that they could not approach near enough to the shore for the soldiers to disembark; “but they were obliged to jump into the water, which was breast-high.”

The northern Sea Kings, who spread such terror over Europe after the downfall of the Roman power, covered every sea with their fleets, which had no other guides than the sun by day and the stars by night. Their vessels are described as large, flat-bottomed boats, of light timber, the sides and upper works of wicker, with a covering of strong hides. They were transported on wagons from one river to another. It can scarcely be credited that these vessels were used on such perilous voyages.

But we have not time nor space to follow with particularity the slow progress of naval and maritime architecture from these rude beginnings. It would, without doubt, be a most interesting study.

Our purpose is now to take up the leading powers of the world, and exhibit their respective naval and maritime strength, by a consultation of the best and latest authorities within reach.

1.—GREAT BRITAIN.

“Look at the already immense number of powerful steam-ships that swarm in the waters of the Mediterranean, and enter every port upon its beautiful shores; that are found careering in every sea of Europe, from the Frozen Ocean to the Bay of Biscay and the Black Sea; that have long since driven every other mode of transit out of the Euphrates and the Red Sea; that penetrate the Indus

almost to its source; that ascend the Canton river, in spite of every obstacle, besides myriads of war-junks, and batter down the walls of the ancient celestial cities; that are surrounding every island and entering every harbor in the West Indies; that swarm along the shores of North America, from the Gulf of St. Lawrence to the Isthmus of Darien; and that regularly transmit the rich produce of the mines of South America, from all its principal ports on the east and west side to the great commercial metropolis of the world—crowded, busy London. Look at all this, and see what an element she has to sustain her in her onward march for empire. At no period did Great Britain possess such a foundation for naval strength within her bosom as at present. She now possesses 3,500,000 tons of shipping, and numbers 160,000 seamen in her commercial navy, while a fleet of seven hundred steam-boats (more than is possessed by all the rest of Europe) prowl along her shores.”*

In 1793, the British navy consisted of 153 line of battle ships, hulks and vessels, on the stocks.

LINE OF BATTLE SHIPS OF ALL NATIONS, 1793.

France.....	86	Denmark.....	24
Spain.....	68	Portugal.....	3
Russia.....	36	Turkey, Naples, and Mediterranean	
Holland.....	28	powers.....	13
		Britain.....	153

Or, a little more than one-half possessed by Great Britain. In 1844, Britain possessed nearly as many such ships as all the rest of the world together.

LINE OF BATTLE SHIPS, 1844.

France.....	45	Spain.....	3
Russia.....	50	Portugal.....	2
Egypt and Turkey.....	19	Denmark.....	6
America.....	10	Sweden.....	10
Naples.....	1	Britain.....	125
Holland.....	8		

ACCOUNT OF THE PROGRESSIVE INCREASE OF THE ROYAL NAVY, FROM HENRY VIII.'S REIGN TO THE CLOSE OF THE LAST WAR, 1814.

Year.	Ships.	Tons.	Men voted.	Navy estimates.
1521.....	16.....	7,260.....	.....	No account.
1578.....	24.....	10,506.....	6,700.....	.....
1603.....	42.....	17,055.....	8,346.....	.....
1658.....	157.....	57,000.....	21,910.....	.....
1688.....	173.....	101,892.....	42,000.....	.....
1702.....	272.....	159,020.....	40,000.....	£1,056,915
1760.....	412.....	321,134.....	70,000.....	3,227,143
1793.....	498.....	433,226.....	45,000.....	5,525,331
1800.....	767.....	668,744.....	135,000.....	12,422,837
1806.....	869.....	892,800.....	143,800.....	17,496,047
1814.....	901.....	966,000.....	146,000.....	18,786,509

In 1814, Great Britain had 901 ships, of which 177 were of the line; and in 1830, 921 ships.

* We are indebted for these facts to the able work of P. L. Sumner, Esq., the Colonial Magazine of London.

BRITISH NAVY, 1816.

	At sea.	In port.	In com- mission.	In ordinary and repairing.	Build- ing.	Guard ships.
Ships of the Line.....	12.....	11.....	29.....	130.....	18.....	2
From 50 to 44 guns.....	2.....	3.....	5.....	19.....	—.....	—
Frigates.....	32.....	7.....	40.....	88.....	9.....	1
Sloops, &c.....	14.....	6.....	20.....	24.....	1.....	0
Brigs.....	46.....	17.....	63.....	117.....	5.....	0
Cutters.....	3.....	1.....	4.....	2.....	—.....	0
Schooners.....	3.....	4.....	7.....	5.....	—.....	0
Bombs.....	—.....	—.....	—.....	6.....	—.....	0
Hospital Ships, &c.....	—.....	—.....	—.....	—.....	—.....	4
	112	49	168	391	33	7
Grand Total.....	592					

The expenses of the navy for the year ending 5th July, 1843, were £6,557,201.

BRITISH NAVY, 1842.

	In Ordinary. No.		In Commission.	
			No. ships.	Men.
First Class.....	16	First Rates.....	2	1,950
Second ".....	15	Second ".....	6	4,700
Third ".....	46	Third ".....	7	4,500
Fourth ".....	33	Fourth ".....	8	3,801
Fifth ".....	64	Fifth ".....	12	4,000
Sixth ".....	10	Sixth ".....	14	2,990
Sloops.....	8	Sloops.....	41	5,458
Brigs.....	15	Steam Vessels.....	66	3,666
Packets.....	11	Gunboats.....	39	1,602
Cutters.....	6	Packet Brigs.....	7	308
Steam Vessels.....	16	Surveying Vessels.....	14	1,014
	240	Yachts.....	3	289
		Stationary Ships.....	14	5,368
			233	39,646

We shall now draw for the remainder of our paper upon official documents, presented in 1846, by Mr. Bancroft, to the Senate of the United States. They were prepared by a Board of Naval Officers, and embrace all the nations of the world.

NAVAL FORCE OF GREAT BRITAIN, 1846.

	In Commission.		Building.		In Ordinary.		Total.
	No.	Guns.	No.	Guns.	No.	Guns.	
Ships of the Line.....	17.....	1,570.....	23.....	2,124.....	75.....	6,258.....	115
Frigates.....	32.....	1,146.....	15.....	498.....	73.....	3,066.....	120
Sloops, brigs, and bombs	71.....	856.....	21.....	305.....	40.....	521.....	132
Schooners, cutters, ten- ders, and ketches.....	33.....	66.....	—.....	—.....	6.....	18.....	39
Steam Frigates.....	6.....	60.....	12.....	120.....	4.....	40.....	22
Steam Sloops.....	54.....	270.....	20.....	100.....	6.....	30.....	80
Steam Packets.....	21.....	42.....	3.....	6.....	—.....	—.....	24
Other Steamers.....	9.....	18.....	6.....	12.....	—.....	—.....	15
Transp'ts and troop ships	5.....	70.....	—.....	—.....	—.....	—.....	5
Receiving ships, coast guards, and other non- effective vessels, as coal depots, convict hulks, &c., employed in service connected with navy.....	84.....	485.....	—.....	—.....	—.....	—.....	84
Total.....	332	4,583	100	3,165	244	9,933	636

The official list numbers 671 vessels, but names only 636; whole number of guns to 636 vessels, 17,681; number of men in the navy, 27,500; boys, 2,000; marines, 10,500—total, 40,000. Revenue vessels, 72, mounting 144 guns: British Indian navy, 1844-'5, 36 vessels, of which 22 are steamers—guns 166. Total number of steamers in the English navy, including 35 contract mail-steamers, 199. There are eight East India mail-steamers.

2.—UNITED STATES.

In 1780, a Committee of Congress reported but four American war-vessels fit for service. In 1781, we had but two frigates, the *Alliance* and the *Deane*; the former of which, being the sole American war-vessel remaining, was sold at the close of the war. The Algerine depredations upon our commerce in the Mediterranean, convinced Congress of the importance of providing a naval armament; and six frigates were authorized in 1794, and also ten vessels to be fitted as galleys. A navy, however, being very unpopular in Congress, and a treaty of peace being made with Algiers, but three of these frigates were completed. In the apprehension of French difficulties in 1798, the President was authorized to build, buy or hire twelve vessels, of not more than 22 guns each, and the naval charge was taken from the Secretary of War and given to an independent department. In 1801, a treaty being made with France, the President was authorized to sell all the naval vessels, except the frigates *Constitution*, *United States*, *Congress*, *Constellation*, *President*, *Chesapeake*, *Essex*, *Philadelphia*, *New-York*; *Boston*, *John Adams*, *Adams* and *General Greene*.

From this period, the growth of the navy has been steady, "fighting itself," as it has been said, "into favor," and into its present stature. We now proceed to furnish a few tabular statements.

UNITED STATES VESSELS, 1799.*

Frigates.	Guns.	Cost.	Ships.	Guns.	Cost.
United States.....	44.....	\$299,336	Ganges.....	24.....	\$80,640
Constitution.....	44.....	302,718	Portsmouth.....	24.....	59,561
President.....	44.....	220,910	Merrimack.....	24.....	46,170
Constellation.....	36.....	314,212	Connecticut.....	24.....	57,260
Congress.....	36.....	197,246	Baltimore.....	20.....	56,277
Chesapeake.....	36.....	220,677	Delaware.....	20.....	59,563
New-York.....	36.....	159,639	Maryland.....	20.....	70,249
Philadelphia.....	33.....	179,349	Pataasco.....	20.....	73,164
Essex.....	32.....	139,362	Herald.....	18.....	47,780
John Adams.....	32.....	113,565	Trumbull.....	20.....	58,494
Adams.....	32.....	76,622	Warren.....	20.....	34,702
Boston.....	32.....	119,590	Montezuma.....	20.....	55,732
General Greene.....	24.....	105,492			
Washington.....	24.....	69,024			
Insurgent.....	36.....	96,640			

BRIGS, *Norfolk*, 18 guns; *Richard*, 18; *Angusta*, 14; *Pickering*, 16; *Syren*, 16; *Argus*, 16; *Hornet*, 16.—SCHOONERS, *Enterprize*, 14; *Experiment*, 14; *Vixen*, 14; *Nautilus*, 14.—GALLEYS, *South Carolina*, *Charleston*, *Benuefort*, *St. Mary's*, *Savannah*, *Protector*, *Mars*, *Governor Davie*, *Governor Williams*.

* Seybert's Statistics of United States.

THE MERCHANT FLEETS

UNITED STATES NAVY, 1812.

	Guns.		Guns.
Constitution.....	44	Siren.....	16
United States.....	44	Argus.....	16
President.....	44	Oucida.....	16
Chesapeake.....	36	Vixen.....	12
Constellation.....	36	Nautilus.....	12
Congress.....	36	Enterprize.....	12
Essex.....	32	Viper.....	12
New-York.....	36	Bomb Vessels:	
Boston, } unseaworthy }	32	Etna,	
Adams.....	32	Vesuvius,	
John Adams.....	26	Vengeance, and	
Wasp.....	16	Spitfire.	
Hornet.....	16	170 Gun-boats.	

UNITED STATES NAVY, 1815.

24 ships.....	916 guns	17 galleys.....	34 guns
16 brigs.....	236 "	51 barges.....	84 "
29 schooners.....	94 "	124 gun-boats.....	179 "
6 sloops.....	23 "	5 lighters.....	6 "
3 ketches.....	—	2 floating batteries.....	64 "
Total guns.....			1,636

AMERICAN NAVAL VICTORIES, 1812—1815.*

	Guns mounted.	Killed and Wounded.	Captured vessels.	Guns mounted.	Killed and wounded.
Essex.....	46	—	Alert.....	20	2
Constitution.....	54	14	Guerriere.....	49	76
Wasp.....	18	10	Frolic.....	32	75
United States.....	54	12	Macedonian.....	44	104
Constitution.....	54	34	Java.....	49	161
Hornet.....	20	5	Peacock.....	22	40
Enterprize.....	—	14	Boxer.....	18	—
Lawrence.....	20	83	Detroit.....	19	
Niagara.....	20	27	Queen Charlotte.....	17	
Caledonia.....	3	3	Lady Provost.....	13	
Ariel.....	4	4	Hunter.....	10	
Scorpion.....	2	2	Little Belt.....	3	
Somers.....	2	2	Chippewa.....	1	
Trippe.....	1	2			
Tigress.....	1	—			
Porcupine.....	1	—			
Peacock.....	20	2	Empervier.....	18	23
Wasp.....	20	26	Reindeer.....	19	67
Wasp.....	20	3	Avon.....	19	42
Saratoga.....	26	57	Confiance.....	39	
Eagle.....	20	33	Linnæ.....	16	
Ticonderoga.....	17	12	Chubb.....	11	
Preble.....	7	2	Finch.....	11	
10 Gallies.....	16	6	13 Gallies.....	18	
Constitution.....	54	15	Levant and Cyane.....	56	120
Hornet.....	20	12	Penguin.....	20	42

During the war, the Americans lost the following vessels:

Nautilus, 16 guns, taken by Shannon frigate.

Wasp, taken by Poictiers, 74-gun-ship.

Vixen, 16 guns, taken by Southampton, 38 guns.

Chesapeake, 49 guns, taken by Shannon, 53 guns.

Argus, 20 guns, taken by Pelican, 22 guns.

* See text.

Essex, 46 guns, taken by *Phoebe*, 53, and *Cherub*, 28 guns.

President, 53 guns, by *Majestic*, and frigates *Endymion*, *Pomone* and *Tenedos*.

Battlesnake, 14 guns, taken by *Leander*, 50 guns.

Frolic, 18 guns, taken by *Orpheus* frigate.

Viper, taken by *Narcissus* frigate.

Brig Siren, taken by *Plantagenet*, 74 guns.

Adams, 32 guns, destroyed to save from enemy.

Boston, 32 }
New-York, 36 } destroyed by order of Secretary of Navy, when the British
Argus, 19 } were about entering Washington.
Columbia, 44 }

UNITED STATES NAVY, 1846.

	In Commission.		Building.		In Ordinary.	
	No.	Guns.	No.	Guns.	No.	Guns.
Ships of the Line.....	4.....	374.....	5.....	420.....	2.....	164.....
Frigates and Razees.....	7.....	374.....	3.....	150.....	5.....	260.....
Sloops of War.....	15.....	314.....	2.....	40.....	6.....	120.....
Brigs of War.....	6.....	60.....	—.....	—.....	2.....	20.....
Steamers of War.....	3.....	23.....	1.....	4.....	3.....	12.....
Schooners.....	1.....	10.....	—.....	—.....	—.....	—.....
Small unarmed vessels and } Store-ships.....	11.....	—.....	—.....	—.....	1.....	—.....
	47.....	1,155.....	11.....	614.....	19.....	576.....

Total number of government vessels, all classes, 77; total guns, when all armed, 2,345; number of seamen and boys employed in naval service, 7,500; marine corps, exclusive of officers, 1,224; total, 8,724.

The following list of the American navy is complete, and is the latest published. It will be seen, the whole number of vessels given is eighty-five.

UNITED STATES NAVY, 1848.

<i>Ships of the Line</i> —11.	Where built.	Commanders.	Where employed.
<i>Pennsylvania</i> 120.	Philadelphia..1837	*C. K. Stribbling..	Rec'ing sp. Norfolk
<i>Franklin</i> 74.	Philadelphia..1815	*J. K. Crowninshield..	do. Boston
<i>Columbus</i> 74.	Washington...1819	T. W. Wyman...	Pacific Ocean
<i>Ohio</i> 74.	New-York.....1820	S. K. Stringham..	do.
<i>North Carolina</i> 74.	Philadelphia..1820	*W. C. Nicholson.	Rec'ing sh. N. York
<i>Delaware</i> 74.	Goepert, Va...1820	—	Norfolk
<i>Alabama</i> 74.	Portsmouth.....	—	Stocks, Portsmouth
<i>Vermont</i> 74.	Charlestown...1819	—	—
<i>Virginia</i> 74.	Boston.....	—	do. Boston
<i>New-York</i> 74.	Norfolk.....	—	do. Norfolk
<i>New-Orleans</i> 74.	Sackett's Harbor..	—	do. Sac. Harbor
<i>Independence, Ra-</i> <i>zee</i> 54.	Boston.....1814	F. Lavellette.....	Pacific Ocean
<i>Frigates, 1st Class</i> , 12.			
<i>United States</i> 44.	Philadelphia..1797	J. Smoot.....	Mediterranean
<i>Constitution</i> 44.	Boston.....1797	—	Boston
<i>Potomac</i> 44.	Washington...1821	—	Norfolk
<i>Brandywine</i> 44.	Do. 1825	T. Crabbe.....	Coast Brazil
<i>Columbia</i> 44.	Do. 1836	*R. Ritchie.....	do. do.
<i>Congress</i> 44.	Portsmouth...1841	Stockton.....	Pacific
<i>Cumberland</i> 44.	Boston.....1842	Jameson.....	Home Squadron
<i>Savannah</i> 44.	New-York.....1842	Mervin.....	Pacific
<i>Raritan</i> 44.	Philadelphia..1843	—	Norfolk
<i>Santee</i> 44.	Portsmouth.....	—	Stocks, Portsmouth
<i>Sabine</i> 44.	New-York.....	—	do. N. York
<i>St. Lawrence</i> 44.	Norfolk.....	—	do. Norfolk
<i>Frigates, 2d Class</i> —2.			
<i>Constellation</i> 36.	Baltimore.....1797	—	Norfolk
<i>Macedonian</i> 36.	Captur'd 1812, re- built in 1836.. }	—	New-York

* Commanders.

† Lieutenants. All others are Captains.

<i>Sloops of War—22.</i>	Where built.	Commanders.	Where employed.
Saratoga.....	20. Portsmouth..... 1842	* D. G. Faragut...	Home Squadron
John Adams.....	20. { Charleston, S. C. } '99, rebuilt, 1820 }	Adams.....	do. do
Vincennes.....	20. New-York..... 1826	—	New-York
Warren.....	20. Boston..... 1826	* Hull.....	Pacific
Falmouth.....	20. Do..... 1827	—	Boston
Fairfield.....	20. New-York..... 1828	—	Norfolk
Vandalia.....	20. Philadelphia..... 1828	—	do.
St. Louis.....	20. Washington..... 1828	—	do.
Cyane.....	20. Boston..... 1837	* Du Pont.....	Pacific
Levant.....	20. New-York..... 1837	Page.....	do.
Portsmouth.....	20. Portsmouth..... 1843	* Montgomery.....	do.
Plymouth.....	20. Boston..... 1844	—	New-York
St. Mary's.....	20. Washington..... 1844	—	Norfolk
Jamestown.....	20. Norfolk..... 1844	* Mercer.....	Africa
Albany.....	20. New-York..... 1846	—	Home Squadron
Germantown.....	20. Philadelphia..... 1846	* Buchanan.....	do. do.
Ontario.....	18. Baltimore..... 1813	* Long.....	Rec'ing sh. Baltim.
Decatur.....	16. New-York..... 1839	Pinckney.....	Home Squadron
Preble.....	16. Portsmouth..... 1839	* Shields.....	Pacific
Yorktown.....	16. Norfolk..... 1839	—	Boston
Marion.....	16. Boston..... 1839	* Simonds.....	Mediterranean
Dale.....	16. Philadelphia..... 1839	* Rudd.....	Pacific
<i>Brigs—5.</i>			
Boxer.....	10. Boston..... 1831	† Bell.....	Coast Africa
Dolphin.....	10. New-York..... 1836	* Pope.....	do. do.
Porpoise.....	10. Boston..... 1836	* Gordon.....	Home Squadron
Bainbridge.....	10. Do..... 1842	† Williamson.....	Coast Brazil
Perry.....	10. Norfolk..... 1843	* Barron.....	do. do.
<i>Schooners—8.</i>			
Experiment.....	Washington..... 1831	† Lardner.....	Rec'ing sh. Phila.
Flirt.....	{ Transferred from } { War Department, }	† Palmer.....	Home Squadron
Wave.....		—	Coast Survey
Phenix.....		—	do. do.
On-ka-hy-e.....	Purchased.....	† Berryman.....	Packet Service
Bonito.....	1. Do..... 1846	† Berrien.....	Home Squadron
Reefer.....	1. Do..... 1846	† Chauncey.....	do. do.
Petrel.....	1. Do..... 1846	† Moor.....	do. do.
<i>Bomb Vessels—5.</i>			
Etna.....	1. Purchased..... 1846	Van Brunt.....	Home Squadron
Stromboli.....	1. Do..... 1846	† Tucker.....	do. do.
Vesuvius.....	1. Do..... 1846	* Magruder.....	do. do.
Hecla.....	1. Do..... 1846	† Fairfax.....	do. do.
Electra.....	1. Do..... 1846	† Hunt.....	do. do.
<i>Steamers—13.</i>			
Mississippi.....	10. Philadelphia..... 1841	† Lee.....	Home Squadron
Fulton.....	4. New-York..... 1837	—	New-York
Union.....	4. Norfolk..... 1842	—	Washington
Princeton.....	9. Philadelphia..... 1843	* Engle.....	Mediterranean
Michigan.....	1. Erie, Pa..... 1844	* Champlin.....	Lakes
Alleghany.....	Pittsburg, Pa.....	† Hunter.....	Mediterranean
Spitfire.....	3. Purchased..... 1846	† Porter.....	Home Squadron
Vixen.....	3. Do..... 1846	† Smith.....	do. do.
Scorpion.....	Do..... 1846	* Bigelow.....	do. do.
Scourge.....	Do..... 1846	† Lockwood.....	do. do.
General Taylor.....	Trans. fm War Dep.	—	Pensacola
Water Witch.....	Washington..... 1845	† Totten.....	Washington
Engineer.....	Purchased.	—	Norfolk
<i>Store Ships and Brigs—6</i>			
Relief.....	6. Philadelphia..... 1836	† Bullus.....	Home Squadron
Erie.....	8. Baltimore..... 1813	† Watson.....	Pacific
Lexington.....	8. New-York..... 1825	† Bailey.....	do.
Southampton.....	6. Norfolk..... 1845	† Tharaburn.....	do.
Supply.....	Purchased..... 1846	† De Camp.....	Home Squadron
Fredonia.....	Do..... 1846	† Turner.....	do. do.
<i>* Commanders. † Lieutenants are Captains. (a) Paizhan gun.</i>			

AMERICAN NAVY YARDS.

"The navy yards of the United States,* like those of Britain, are seven in number, viz. Portsmouth, in New-Hampshire; Charlestown, near Boston, Mass.; Brooklyn, New-York; Philadelphia; Washington; Gosport, in Virginia; Pensacola, Florida.† None of these, however, are so extensive, so well furnished and stored with the muniments of war, so efficiently kept up, or so conveniently situated on the sea-coast, as are our Portsmouth, Plymouth, Pembroke and Sheerness yards. The Americans have also commanders of naval yards located at Baltimore and Charleston, two leading ports, but there are no regular government establishments or conveniences for building and repairs in those harbors.

"PORTSMOUTH.—This dock-yard is situate at Navy Island, on the east side of the river Piscataqua, three miles from the ocean. There is every convenience for the construction of vessels of the largest class. The harbor of Portsmouth is a fine one, with forty feet of water in the channel at low tide, and is well protected by its islands and headlands from storms. The tide, which here rises ten feet, flows with so rapid a current as to keep the harbor free from ice.

"BOSTON.—The navy yard of this port is situated at the south-east part of Charlestown, about a mile to the north of the city of Boston. There is a dry-dock built of hewn granite. The yard covers sixty acres of land, on which are erected a marine hospital, a spacious ware-house, an arsenal, powder-magazine, and a house for the superintendent, all of brick; there are also two immense wooden sheds, under which the largest vessels of war are built.

"BROOKLYN.—The naval yard, situated on Wallabout Bay, covers forty acres of ground, enclosed by a brick wall on the land-side, and contains two large ship houses, seven extensive timber sheds, built of brick, and several workshops, offices for the officers, and extensive storehouses; a dry-dock is in the course of formation. The yard is but a short distance from the city of New-York, the width of the ferry is about 700 yards. The naval hospital occupies a commanding eminence half a mile east of the yard, and is a large building surrounded by thirty-three acres of cultivated ground, enclosed by a brick wall.

"PHILADELPHIA.—This naval yard requires no observation. We may, however, remark, that there is in that city, a handsome naval asylum or marine hospital, capable of lodging 400 persons, erected at a cost of upwards of \$300,000.

"WASHINGTON.—The navy yard is situated on the Anacosta or eastern branch of the Potomac, 295 miles from the ocean by the course of the river and bay. It is about three-fourths of a mile south-east of the capital, and contains twenty-seven acres. It has houses for the officers, shops and warehouses, two large ship-houses, a neat armory, and every kind of naval stores. Several ships of

* We extract from Simmonds' Colonial Magazine.

† Also add Charleston, S. C., and Memphis, Tenn., where works, &c. exist.

war, some of which were of the largest class, have been built at this yard. The river has water of sufficient depth for frigates to ascend to the navy yard without being lightened.

"NORFOLK.—The extensive naval yard at this port is situated at Gosport, opposite to Norfolk, on the south side of the river Elizabeth, thirty-two miles from the ocean. This yard possesses a large and extensive dry-dock, constructed of hewn granite, capable of receiving a line-of-battle ship, and which cost nearly \$1,000,000. The harbor is safe and capacious, having eighteen feet of water.

"PENSACOLA.—The United States navy yard here is an important one, distant eight miles from the city, and five from the entrance of the harbor, and covers nearly eighty acres of ground, enclosed by a high brick wall. It contains houses for the officers and a naval store, and other buildings adapted to the convenience of the establishment."

NAMING AMERICAN NAVAL VESSELS.

"There is a matter connected with the naming of American vessels, which may be incidentally adverted to, for the information of professional men: it is this:—A joint resolution of Congress, of 3d March, 1819, requires vessels of the first class to be called after the *States* of the Union; those of the second class after *rivers*; and those of the third class after the principal *cities* and *towns*; but no two vessels in the navy can bear the same name."

3.—THE FRENCH NAVY.

France had, as early as 1681, 60,000 seamen, and in 1791, 100,000, commanding 82 ships of the line and 73 frigates.

FRENCH NAVY, 1839.

Ships of the Line, first rates.....	5
" second rates.....	1
" third ".....	7
" fourth ".....	9—22
Frigates, first class.....	12
" second class.....	12
" third ".....	13—37
Steamers, from 4 to 6 guns.....	25—25

NAVAL FORCE OF FRANCE, 1845.

	In Commission. No.	Guns.	Building. No.	Guns.	In Ordinary. No.	Guns.	Total Ships.
Ships of the Line.....	17	1,598	25	2,442	4	340	46
Frigates.....	23	1,184	16	810	6	310	45
Corvettes.....	17	444	3	90	6	124	26
Brigs.....	34	464	2	40	21	270	57
Schooners, cutters, and } small vessels.....	37	122	2	12	8	20	47
Transports, &c.....	33	132	10	40	14	56	59
Steam Frigates.....	5	78	2	12	—	—	7
Steam Corvettes.....	8	62	9	54	—	—	17
Smaller Steamers.....	41	1,209	3	15	—	—	44
Total.....	215	4,303	73	3,515	59	1,120	346

Total guns when all armed, 8,928; men and boys in service in 1845, 27,554. Cannon and powder for service, manufactured at government foundries, &c. The Minister of Marine proposed to increase the navy to the following maximum: 40 ships of the line; 20 to be always ready for sea, and 20 in construction; 50 frigates, of which 40 to be ready for sea, and 10 on stocks; 60 sloops, 60 brigs, and 40 lighter vessels, besides transports. The steam-navy to be composed of 100 vessels in all.

4.—NAVAL FORCE OF RUSSIA.

Nicholas has kept a constant eye upon his naval affairs, and has, within fifteen or twenty years, created two large fleets in the Baltic and on the Black Sea.

	Vessels.	Guns.	No. of guns in vessel.
Ships of the Line in Baltic.....	30.....	2,400.....	Estimated 80 guns each
Frigates in Baltic.....	20.....	840.....	" 42 "
Sloops, brigs, and gun-boats in Baltic..	40.....	320.....	" 8 "
Steamers in Baltic.....	26.....	104.....	" 4 "
Ships of the Line in Black Sea.....	17.....	1,360.....	—
Frigates ".....	10.....	510.....	5 of 60, and 5 of 42 guns
Sloops and brigs ".....	12.....	168.....	estimated 14 guns each
Smaller vessels ".....	18.....	158.....	—
Steamers ".....	6.....	36.....	" 6 "
The Baltic Fleet has a complement.....			35,000 men
The Black Sea ".....			24,000 "

Total.....59,000 "

Exclusive of the naval force in the Caspian Sea.

RECAPITULATION.

Relative naval power of each nation.	In commission.		Building, ordn'y, &c.		Total.		No. of men.	No. of war steamers.
	Ves's.	Guns.	Vessels.	Guns.	Vessels.	Guns.		
Great Britain.....	332	4,583	304	13,098	636	17,681	40,000	141
France.....	215	4,293	131	4,635	346	8,928	27,554	68
Russia.....	179	5,896	—	—	179	5,896	59,000	32
Turkey.....	62	2,636	4	24	66	2,660	26,820	9
United States..	47	1,155	30	1,190	77	2,345	8,724	5
Egypt.....	35	1,448	3	312	38	1,760	—	1
Holland.....	48	302	86	1,344	134	1,646	—	4
Sweden.....	330	660	50	1,196	380	1,856	—	2
Denmark.....	96	344	12	732	108	1,076	—	—
Austria*.....	74	686	—	—	74	686	—	—
Brazil.....	31	450	11	325	42	775	—	8
Sardinia.....	11	226	4	220	15	446	—	2
Spain.....	21	348	—	—	21	348	—	4
Two Sicilies*..	17	338	—	—	17	338	—	—
Portugal.....	59	—	—	—	—	—	—	—
Mexico.....	23	42	—	—	23	42	—	—

* Although the whole naval force of these nations has been placed in the column of "in commission," it is probable that a portion of it is in "ordinary," but it is not known what portion. These nations have a few war steamers, but the number is not known.

† Of the 332 vessels in commission, 84 bear but a nominal armament, although, by the official navy list for January, 1846, they appear to be employed in important service—as receiving, coast-guard, and convict vessels, coal depôts, quarantine service, &c.

‡ 323 of this number are gun-boats.

§ 86 of this number are men-of-war cutters and gun-boats.

1.—COMMERCIAL MARINE, GREAT BRITAIN.

	Steam vessels.	Tonnage.	Other vessels.	Tonnage.	Crews.
United Kingdom.....	897	113,232	23,253	2,994,166	170,162
Isle of Guernsey, Jersey and Man..	3	445	763	50,226	5,550
Total.....	900	113,677	24,016	3,044,392	175,691

VESSELS ENGAGED IN COASTING AND FOREIGN TRADE, G. B., 1844.

INWARD— <i>Foreign Trade.</i>	Vessels.	Tonnage.	Crews.
British and Irish vessels.....	19,687	3,647,463	195,728
Foreign vessels.....	9,608	1,402,138	76,091
<i>Coasting Trade.</i>			
Employed between G. B. and Ireland.	10,147	1,349,273	—
Other coasting vessels.....	123,751	9,615,434	—
OUTWARD— <i>Foreign Trade.</i>			
British and Irish vessels.....	19,788	3,852,822	212,924
Foreign vessels.....	9,816	1,144,346	77,109
<i>Coasting Trade.</i>			
Employed between G. B. and Ireland.	16,948	1,817,756	—
Other coasting vessels.....	128,294	9,877,105	—

The above list includes all the arrivals and departures within the year, including repeated voyages of the same vessels.

In 1838, McCulloch stated the whole number of vessels owned in the British Empire, including plantations :

	29,912 vessels
	2,420,759 tons
	147,357 men
In 1844, steam vessels in England.....	679 vessels
“ steamers in Scotland.....	75,047 tons
“ Ireland.....	137 vessels
	20,666 tons
	81 vessels
	17,519 tons
Guernsey, &c., and Colonies.....	91 vessels
	12,444 tons

FISHERIES, 1843.

Northern, or Greenland.....	16 ships..	800 men
Spermaceti whale.....	68 “	2,176 “
Common oil.....	1 “	32 “
	85	3,008

Notes to Recapitulation on preceding page, continued.

	Vessels.	Guns.
|| Exclusive of sailing vessels in the Indian navy.....	14	106
steamers in the Indian navy.....	22	60
contract mail steamers, under control of government.....	26	—
revenue vessels.....	72	144
Total.....	134	310
(a) 1843.		
¶ Exclusive of the Caspian fleet,		
No. of vessels. Total tons. No. of guns. Officers and men.		
** Exclusive of U. States rev- { 13 sailing...1,443.....	61	769
enue vessels, consisting of { 8 steam...3,110.....		

II.—UNITED STATES COMMERCIAL MARINE, 1845.

Estimated number commercial vessels.....	19,720
Tonnage.....	2,416,999
Men.....	118,600
Of these,—	
Registered and in foreign trade.....	1,095,172 tons
Enrolled coastwise.....	1,190,898 "
Licensed, under 20 tons.....	32,322 "
Enrolled in cod fishery.....	69,825 "
" mackerel fishery.....	21,413 "
" whale.....	206 "
" cod, (under 20 tons).....	7,163 "

Of the registered tonnage, 745 vessels are in the whale fishery, 237,000 tons and 18,625 men; steam-boat tonnage, United States, 316,019; tonnage of lakes, 82,933; 474 vessels, 75 being steam.

III.—FRENCH COMMERCIAL MARINE, 1844.

Number of vessels, (mean of two authorities).....	13,782
Tonnage.....	839,608
of which, vessels employed in whale fishery.....	29
Tonnage.....	11,903
Crews.....	866

In 1840, the cod-fishery employed 458 vessels, of 54,583 tons; 9,897 men. In coast-fishery, also, 5,849 boats, 40,610 tons, 25,000 fishermen; private steamers in 1844, 225.

RECAPITULATION.

Nations in the order of their commercial importance.	No. of vessels in commerce and fisheries.	Tonnage.	No. of guns to each 100,000 tons of commerce.
United Kingdom of Great Britain.....	23,898.....	3,007,581.....	588
United States.....	19,666.....	2,416,999.....	97
France.....	13,782.....	839,608.....	1,063
Sweden and Norway.....	5,450.....	471,772.....	224
Holland.....	1,528.....	241,678.....	683
Russia.....	Not known.....	239,000.....	2,466
Two Sicilies.....	9,174.....	213,198.....	158
Austria.....	6,199.....	208,551.....	321
Turkey.....	2,220.....	182,000.....	1,461
Sardinia.....	3,502.....	167,360.....	265
Denmark.....	3,036.....	153,408.....	709
Portugal.....	798.....	80,525.....	
Spain.....	2,700.....	80,000.....	
Brazil.....	Unknown.....	Unknown.....	
Mexico.....	Unknown.....	Unknown.....	

ART. VII.—THE SUGAR-CANE.

AVEQUIN'S REVIEW OF M'CULLOH, REVIEWED.

To Prof. J. D. B. De Bow :

SIR,—The number of your Review for July, 1848, contains an article, or letter, entitled "M'Culloh's Report on Sugar, reviewed," written by Mr. Avequin of your city, in a spirit of entire condemnation. He asserts, (page 25,) that "this Report is undeserving any eulogy;" that "the scientific or chemical part is radically and insufferably bad," and that "you will look in vain for a single paragraph in the chemical part of the report, which does not present an open flank for the attack of the critic;" for the truth of which declaration, he "appeals to all persons who have the slightest knowledge of chemistry." He strangely affirms, in the outset, that "the opinions which he is about to express are *entirely disinterested*," and at the conclusion of his article, after having entertained the reader with a long account of his own experiments, methods, and ideas, remarks that he "has limited himself to showing you some of the errors in the first chapter, only the most striking," and that "the facts exposed in his letter are *due to his own researches* on the sugar-cane." Certainly, therefore, he must be, as he professes himself, a most "*disinterested*" judge!

He tells you that, "in his excellent remarks, Mr. V. Aime has shown you that the purely practical part of this work contains nothing new; that it is of little value; that, on the contrary, it contains a great many errors, and has proved it to you." And yet Mr. Valcour Aime, who seems to have far more reason to consider himself unjustly treated by me than Mr. Avequin possibly can have, in the "excellent remarks" to which the latter refers, says of my report: "It is, in my opinion, one of the best documents which has ever been written on the subject. It makes known and describes generally, with great accuracy, *all the latest and best improvements* which have been made throughout the world in the sugar industry, and embodies an amount of *useful information*, which our sugar-planters could not otherwise obtain without perusing a great many volumes." Mr. Avequin says of Mr. V. Aime, that he is a "planter" and an "able refiner" of "long experience" and "practical knowledge;" his opinion of my work must, therefore, be admitted to be somewhat entitled to public confidence. The reader can refer, for that opinion in full, to Mr. V. Aime's own article in the March number of your Review for the present year; the preceding extract is sufficient to let him see how correctly it is understood and represented by the "*disinterested*" critic of my report. To Mr. V. Aime's criticisms I will reply at the end of this article, when I have done with "the attack" of Mr. Avequin upon me.

I shall pass over much of that attack in silence; for the reason *that in the midst of unremitting labors I have but little time and less*

inclination to attend to, or trouble your readers with, matters which I deem unimportant; and I shall proceed at once to meet those charges which Mr. Avequin makes against me last in order of position, but first in importance in *his* estimation, because they "are due to *his own* researches on the sugar-cane;" and which, therefore, have been prompted by a very "disinterested" desire to "show that this work is not without faults, and even great ones; that it does not deserve all the praise which has been lavished upon it; that it contains on the contrary numerous errors,—errors which are not pardonable in a professor of chemistry."

On page 44, Mr. Avequin says:

"I have spoken above of quotations mutilated or disfigured by the professor. I will give you a specimen in which I am directly concerned, where he speaks of *cerosie*."

"In paragraph 1st, page 22d of his report, the professor says: '*Cerosie* is a substance closely resembling beeswax, both in its appearance and its properties. It was discovered or first investigated by Mr. Avequin, of New-Orleans, who gave it the above name. A more full account of it, taken from Mr. Avequin's description and analyses, is given in the treatises on Chemistry, both of Liebig and Dumas,* to which I therefore refer. The planter may, however, for all his purposes, regard it as wax.'

"Professor M'Culloh gives here the description of a substance which he does not know, which he has never seen, and the properties of which he disfigures. The *cerosie* does not resemble, in any respect, beeswax. *Cerosie* may be considered as an alcohol, unique in its kind, since it is the only one which is found completely formed and in a state of purity in nature."

"Its atomic formula is represented by $C_{24}H_{50}O=24(CH_2)+H^2O$."

"Judge, then, of the exactness of the professor:"

"*Ab uno disce omnes.*"—VITRUI.

"The professor would not believe that *cerosie* is an alcohol or an aldehyde, these substances have so little resemblance to each other."

In my report, the note at the bottom of the page corresponding to the asterisk gives as references: "Dumas, *Traité de Chim.*, vol. vi. p. 699; Paris, 1843. Also Liebig's *Chim. Organique*, vol. ii. p. 304; Paris, 1844." But, in Mr. Avequin's article, he has seen fit to add a third reference: "Gerhardt, *Précis de Chimie Organique*, tome i. page 134; Paris, 1844." I adopt his reference and hold him bound by the implied admission that this treatise of M Gerhardt is good authority. I also accept the issue: "*ab uno disce omnes*," as the criterion by which my "exactness" shall be "judged."

This general accusation of "quotations mutilated and disfigured," is a grave charge—one which, if true, should injure me as a "faithful" and "conscientious" narrator of matters of fact "without deception," and prove me destitute of those "high qualities" which Mr. Avequin says he is "willing to admit with Mr. V. Aime, and does not deny." I will, therefore, lay before your readers the authentic chemical history of this substance, of which it is said that I "disfigure the properties," and that it "does not resemble in any respect beeswax." It may be found somewhat tedious, but I give it in full:

In the *Journal de Pharmacie*, vol. xxvi., page 738; Paris, 1840,

there is an article written by "M. Avequin, Pharmacien à la Nouvelle-Orléans," and entitled "*Note sur la Cire Végétale de la Canne à Sucre*," which I here transcribe, and request you to publish in its original language, (as I do in relation to all similar extracts,) that no mistake may occur by translation, and that Mr. Avequin may be judged by *his own words* :

" Note sur la Cire Végétale de la Canne à Sucre."

" Par M. AVEQUIN, pharmacien à la Nouvelle-Orléans."

" Un grand nombre de plantes laissent exsuder sur leurs feuilles ou sur leurs fruits une substance à laquelle on a donné le nom de cire végétale. Tingry, de Genève, est le premier chimiste qui se soit occupé de cette matière. Proust avait depuis étendu la découverte de Tingry à un grand nombre de fruits, tels que les prunes, les cerises, les raisins, etc., et à presque toutes les feuilles, spécialement aux feuilles glauques. Les choux, les iris, plusieurs graminées, les roseaux en donnent aussi; les giraumons récoltés entre les tropiques en présentent une couche épaisse; mais aucune plante n'en fournit autant que la canne à sucre. Cette substance n'est pas identique sur tous les végétaux qui en produisent; on pourrait même affirmer qu'elle diffère toujours par quelques nuances dans ses propriétés physiques et chimiques, et que chaque végétal produit une substance cireuse qui lui est propre."

" Cire de la canne à sucre."

" Il existe sur la canne à sucre une substance qui a quelques analogies avec la cire du myrica, et qui n'a jamais été examinée, du moins que je sache. Je l'avais signalée dans l'*Analyse comparative de la canne à rubans et de la canne d'Otaïti*, mais sans en avoir étudié les propriétés, parce qu'à cette époque je n'avais pas pu m'en procurer une assez grande quantité. Bien que je lui donne le nom de cire, il serait peut-être plus convenable de lui en assigner un autre, car elle s'éloigne beaucoup des propriétés de la cire."

" Cette substance se trouve en plus grande abondance à la surface de l'écorce de la canne violette que sur toutes les autres variétés de cannes; la partie engainante des feuilles en est aussi recouverte. Elle se présente sous forme de poussière blanche ou glauque, adhérente à l'écorce, et elle peut facilement en être détachée en la grattant avec la lame d'un couteau, ou tout autre instrument tranchant. Vient ensuite la canne à rubans qui en fournit beaucoup. La canne d'Otaïti en contient à peine le tiers de la canne à rubans, et la canne créole n'en donne presque pas. Sur cette dernière variété, il n'y en a qu'un anneau à la base de chaque nœud et en bien petite quantité. A cet égard, je ferai observer que c'est la plus mauvaise variété de canne qui fournit le plus de cire. La canne violette est très-dure, très-ligneuse, contient peu de jus et donne peu de sucre; cependant le sucre que l'on en obtient est ferme et de bonne qualité."

" Après m'être procuré une certaine quantité de cire brute, par le grattage, comme il vient d'être dit plus haut, pour l'amener à l'état de pureté, je la fais macérer à froid dans de l'alcool à 35 ou 36 degrés, pour la débarrasser de la matière violette, matière identique à la chlorophylle avec laquelle elle est mélangée. Quand elle a subi ce traitement à plusieurs reprises et que l'alcool froid ne lui enlève plus rien, je la traite par l'alcool à 36 degrés bouillant, qui la dissout complètement; je passe à travers une toile de lin serrée, en exprimant fortement, et je retire l'alcool par la distillation; il ne reste plus qu'à la faire fondre au bain-marie pour l'avoir pure."

"Propriétés physiques et chimiques."

" Cette matière est insoluble dans l'eau."

" Elle est également insoluble dans l'alcool à 36 degrés à froid."

" Elle est entièrement soluble dans l'alcool bouillant et ne s'en sépare point par le refroidissement. Elle se prend au contraire en masse opaline et ressemble à une solution alcoolique de savon animal. Plus l'alcool est fort, et mieux elle s'y dissout à chaud. Quatre grains de cette substance suffisent pour solidifier une once d'alcool à 36 degrés et lui donner la consistance et l'apparence de l'opodeldoch. On pourrait même s'y méprendre à la vue."

" Elle est insoluble dans l'éther sulfurique à froid."

" Elle s'y dissout difficilement à chaud et en petite quantité ; par le refroidissement l'éther la laisse déposer sous forme de petits cristaux grenus."

" Cette substance a une teinte jaunâtre un peu terne."

" Elle est excessivement dure ; la cassure est nette et l'on peut facilement la réduire en poudre en la triturant dans un mortier de marbre ou de verre ; elle est alors d'une grande blancheur."

" Réduite sous forme de bougie, elle brûle avec une belle flamme blanche, comme la cire ou le spermaceti. Sous ce rapport, elle peut servir à faire des bougies de luxe et qui ne le cèdent en rien à ces deux substances par l'éclat de la flamme et par sa durée."

" Elle fond à 82 degrés centigrades, à 80 degrés elle se solidifie. C'est, je crois, la substance de ce genre dont le point de fusion est le plus élevé."

" Fondue au bain-marie, et coulée en petite masse dans un vase froid et bon conducteur du calorique, elle se prend à l'instant même, se crispe en touchant le corps froid, et la surface inférieure présente une foule d'accidents et de guilochures très-agréables à l'œil. Ces accidents sont déterminés par le retrait subit que cette matière prend en se figeant."

" Son poids spécifique est égal à 961 à la température de 10 degrés. Elle est sans odeur, ou presque sans odeur définissable. Elle se combine très-difficilement avec les alcalis."

" L'air atmosphérique n'a aucune action sur elle ; j'ai conservé de la cire de canne pendant plusieurs années dans un flacon mal bouché, sans qu'il en soit résulté aucun changement dans ses propriétés physiques."

" Cette substance est susceptible d'affecter une forme cristalline. Pour l'obtenir sous cet état, on la fait fondre dans une capsule de porcelaine, au bain-marie, et on la laisse refroidir très-lentement. Lorsque sa surface est solidifiée, on la perce au moyen d'une lame de couteau chauffée et on fait couler la portion encore liquide. L'intérieur de la capsule présente alors une foule d'aiguilles cristallines tronquées et entrelacées, bien apparentes. Je dirai cependant que cette cristallisation ne peut s'obtenir qu'en agissant sur une livre de matière au moins ; sur une plus petite quantité le résultat n'est pas aussi satisfaisant, bien qu'il soit très-sensible."

" Cette substance est de même nature sur toutes les variétés de cannes à sucre "

" 153 cannes violettes grattées avec soin et sans enlever l'épiderme, m'ont donné 170 grammes de cire. Cette matière a été pesée deux mois après son extraction. J'estime que je n'en ai pas extrait plus de la moitié par ce moyen mécanique, et qu'il en est bien resté une égale quantité sur les cannes."

" Je l'ai fait macérer à froid dans de l'alcool à 35 degrés."

" Elle a subi ce traitement jusqu'à ce que l'alcool sortit presque sans couleur. Après ces divers traitements, elle pesait 154 grammes. Elle a été traitée alors par l'alcool bouillant pour la purifier."

" Le procédé par le grattage serait très-long, et peu économique ; j'ai

employé un autre moyen plus expéditif, et qui permet de l'obtenir plus facilement."

"En passant les cannes au moulin, pour en extraire le jus, une portion de cette matière se détache par la pression; elle est entraînée par le jus de canne et vient nager à la surface des bacs sous forme de poudre blanche. On prend ce jus de cannes, on le porte à l'ébullition à une chaleur douce, sans y ajouter de chaux; on recueille soigneusement toutes les écumes, lorsqu'elles sont bien formées; on les lave et on les fait macérer dans de l'alcool faible pour enlever toute la partie sucrée et pour détruire la viscosité qui s'oppose au lavage à l'eau. On les met égoutter sur une toile et on les fait sécher. Amenées à cet état, on les réduit en poudre, on les traite par l'alcool à 36 degrés à froid; on renouvelle l'alcool à plusieurs reprises, ou jusqu'à ce qu'il ne prenne plus de teinte verte. Alors on jette le tout sur un filtre et on le fait sécher. On prend ce résidu qui contient la cire, on le traite par l'alcool à 36 degrés bouillant, on passe à travers une toile de lin serrée et on exprime fortement. L'alcool en se refroidissant se prend en masse comme s'il contenait une solution de savon animal. On réitère ce traitement par de nouvel alcool bouillant, jusqu'à ce qu'il n'enlève plus de cire."

"On en sépare l'alcool par la distillation au bain-marie: mais par ce moyen la cire a toujours une teinte verte. Cette matière retient une portion de chlorophylle avec tant de force que l'alcool à froid ne peut tout débarrasser entièrement. C'est au moment de sa fusion à la surface du jus de cannes bouillant, qu'elle s'est combinée avec la chlorophylle provenant des débris d'écorce de la canne."

"En passant les cannes au moulin, toute la cire ne se détache pas, il en reste une grande partie sur les bagasses. 30 litres de jus de cannes à rubans m'ont donné 22,50 grammes de cire d'une belle couleur verte. Par ce dernier moyen, cette cire n'est pas pure, elle se trouve mélangée de chlorophylle."

"La matière verte ou chlorophylle, dissoute par la cire de canne, ne conserve pas très-longtemps sa belle couleur verte. Après quelques mois, sa belle teinte verte commence à s'affaiblir, et après plusieurs années elle n'a plus qu'une couleur jaune verdâtre."

"J'ai retiré plus de 2 grammes de cire d'une canne violette."

"Un arpent de cannes donne de 18 à 20,000 cannes, par conséquent 18,000 cannes donneraient 36 kilogrammes de cire."

"Un planteur qui roule par an 300 arpents de cannes, pourrait faire plus de 10,000 kilogrammes de cire."

"Cette substance offre de l'intérêt sous plusieurs points de vue:

1^o Son haut point de fusion;

2^o Sa consistance, qui la rapproche de la dureté du bois;

3^o Sa cristallisation;

4^o Son application à l'éclairage, comme bougie de luxe;

5^o Sa propriété de solidifier l'alcool, propriété qu'aucune substance de ce genre ne partage avec elle."

The preceding article of Mr. Avequin, with some modifications chiefly of style and language, was also published about the same time in the *Annales de Chimie et de Physique*, t. 75, p. 218; from which version of it, I make the following extract:

"Je donne le nom de *Cérosie* à cette substance (de *Keros*, cire,) ce qui rappellera sa composition et quelques-unes de ses propriétés les plus importantes."

In the same volume, and immediately succeeding the article of

Mr. Avequin (see page 222,) there is a communication from M. Dumas, entitled: "*Note sur la Composition de la Cérosie*," which gives the following results of three analyses:

Carbon,.....	81.4.....	81.2.....	81.0
Hydrogen,.....	14.2.....	14.2.....	14.0
Oxygen,.....	4.4.....	4.6.....	5.0
	100.0	100 0	100.0

Of which results M. Dumas says:

"L'ensemble de ces analyses conduit à une formule fort remarquable, qu'on regrette, faute de matière, de ne pouvoir contrôler par les recherches qu'elle indique. C'est la formule C^{86}, H^{100}, O^2 , ou mieux, C^{86}, H^{100}, O^2 , qui donnerait en effet

C^{86}	3600.....	81.4
H^{100}	625.....	14.1
O^2	200.....	5.5
	4425	100.0

"En représentant la cérosie par C^{86}, H^{100}, O^2 , on en ferait un alcool, qui prendrait place après l'éthyl, substance dont la cérosie se rapproche beaucoup en tout cas."

To explain to the reader the difference between the formula for *cerosie* of M. Dumas and that of M. Gerhardt, which Mr. Avequin adopts, it is only necessary to remark, that this difference is one only of theory and notation; and that, according to the peculiar views of M. Dumas, the equivalent of carbon which chemists generally regard as single, is a double atom, while M. Gerhardt regards as single atoms those which others assume to be double: so that C^4, H^2, O^2 , of M. Dumas, are respectively, C^2, H^2, O^2 , of Liebig and others, and C, H, O, of M. Gerhardt.

Now let the reader decide whether I have "disfigured the properties" of this substance, which Mr. Avequin has himself called the *wax of the cane* ("cire de la canne à sucre;") which he says is of a dull yellowish color ("à une teinte jaunâtre un peu terne") and that it has some analogy to myrtle wax ("à quelques analogies avec la cire du myrica;") which he considered interesting because it may be manufactured into candles, which burn with a beautiful white flame like wax or spermaceti, ("réduite sous forme de bougie, elle brûle avec une belle flamme blanche, comme la cire ou le spermaceti;") of which wax he tells us, that a planter, who rolls annually 300 arpents of canes, might make more than 10,000 kilogrammes ("pourrait faire plus de 10,000 kilogrammes de cire;") and to which he gave the name of *cerosie*, derived from the Greek word for wax, as indicative of its composition and some of its most important properties, ("ce qui rappellera sa composition et quelques-unes de ses propriétés les plus importantes.")

But while he compares it to myrtle-wax, I have said that it "resembles bees-wax." Everybody is familiar with bees-wax, and therefore I compared *cerosie* to it, "both in appearance and properties;" that those possessing only "a general knowledge of chemistry," might form some notion of a substance which few know or

care much about, because they are not "directly concerned," as Mr. Avequin avows himself to be. That any one desiring a more full account of it might know where to look, I gave references, by page and volume, to the standard treatises of Liebig and Dumas. What more could a reasonable man expect in a brief report which was not designed to be a complete treatise on Organic Chemistry, and in which I might, with all propriety, have omitted any descriptive notice whatever of this substance, as I have done of many others which are much more important and more frequently mentioned in it? Had I compared it to myrtle-wax, as Mr. Avequin has done, many would probably have only conjectured that myrtle-wax must be something not unlike common bees-wax; and that, therefore, cerosie must be analogous to the latter. The following account of myrtle-wax is translated from the fifth volume of the treatise on Chemistry of Berzelius, a work admitted by all chemists to be of the highest authority:

"Myrtle wax (*cire du myrica*) is greenish; but when boiled in water it becomes partially discolored, and by exposure to the sun is entirely bleached. When cold it is harder than bees-wax, and may be pulverized. When heated, it hardens with less readiness than ordinary wax; and it melts at 43°. Its specific gravity is 1.015. Treated with 20 parts of boiling alcohol, it is decomposed, and yields 87 per cent. of *cerine*, which dissolves, and 13 per cent. of *myricine*, which remains. The saturated solution of *cerine* in alcohol deposits on cooling a quantity of *cerine*, which renders it gelatinous. It is slightly soluble in cold ether, but dissolves completely in four parts of boiling ether; upon cooling, the greater part of the wax is deposited. Oil of turpentine, when cold, softens it; but dissolves when boiling 1-17 of its weight. Also the acids and alkalis act upon it as they do upon common wax. The different varieties of wax which are obtained directly from the vegetable kingdom, are usually more brittle and fusible than bees-wax; and when used for the manufacture of candles, they give less light than bleached wax, and require the addition of tallow to render them less brittle."

Without going into details, the reader may be told that bees-wax is also composed of *cerine* and *myricine*, though in different proportions, and that the chemical properties of these two varieties of wax are not less alike than their physical. How just, therefore, must Mr. Avequin be in his censure of me for comparing cerosie to one of these waxes, when he himself compares it to the other?

"Strange! Such difference there should be
'Twixt tweedle-dum and tweedle-dee."

Mr. Avequin tells you (page 44) that "cerosie does not resemble in any respect bees-wax;" that it "may be considered as an alcohol unique in its kind," and therefore bids you judge of my "exactness," while he affirms that I "would not believe that cerosie is an alcohol or an aldehyde, these substances have so little resemblance to each other." Whatever I may or may not believe, I am not yet, and I hope I never shall become, so absorbed in speculative chemistry, and destitute of ordinary sense, as to compare to alcohol or aldehyde a wax-like substance, which Mr. Avequin has himself called wax, ("*cire*") and recommended for the manufacture of candles, when the object I have in view is merely to give some idea of *its appearance and properties to practical men.*

But I am willing to admit that cerosie may be, as Mr. Avequin contends, an alcohol or an aldehyde, and equally willing to believe it to belong to either, or neither, of these theoretical classes, when its composition and formula shall have been rigidly established. On this point I take his own reference, (Gerhardt, *Precis de Chim. Organique*, tome i. page 134; Paris, 1844), where we find for cerosie the formula $24 (C H^2) + H^2 O$, adopted by Mr. Avequin, and the statement: "Des cinq alcools que nous venons de nommer, un seul se rencontre dans la nature, c'est la cerosie, *matiere cireuse* particulière que M. Avequin a extraite de la canne à sucre." All this seems very straight, but if Mr. Avequin will refer to page 417 of the second volume of the same treatise, he will find the words: "*Cerosie normale*— $C^{24} H^{48} O$ (Lewy.) En râclant la surface de l'écorce des cannes à sucre, et particulièrement la variété violette, on obtient une *substance cireuse* que M. Avequin a appelée *cerosie*." And the note at the bottom of the page says: "Dans le premier volume, p. 134, nous avons classé la cerosie parmi les alcools; mais les analyses récentes de M. Lewy démontrent que ce corps ne présente pas une semblable composition." Now which of these two different views of the nature of *cerosie* is correct, that based upon an analysis of M. Dumas, and the corresponding formula $24 (C H^2) + H^2 O$, which makes it an *alcohol*, or that which classifies it among the *aldehydes*, according to an analysis of M. Lewy, which differs from that of M. Dumas, and gives for its formula, $C^{24} H^{46} O$, or two atoms less of hydrogen? As our knowledge of the composition of this substance is based upon discordant analyses made by two different chemists, what degree of certainty can be claimed for it? Which of the two is right, and may they not both be wrong? Does not this subject belong to the "Chemistry of Probabilities," until some third person shall have investigated it thoroughly?

Let us look a little more closely into the matter. M. Dumas assumes, in order to establish his formula, the composition

Carbon.....	81.4
Hydrogen.....	14.1
Oxygen.....	4.5
	100.0

which is not that of either one of his analyses, nor yet the mean of the three; it is, therefore, a *hypothetical* and *approximate* basis, attended only with more or less of *probability*, and of which he expresses the regret that he could not investigate the subject fully, for want of a sufficient quantity of the substance, ("une formule forte remarquable qu'on regrette, faute de matière, de ne pouvoir contrôler par les recherches qu'elle indique.") Again, M. Gerhardt (vol. 2, p. 417,) after giving us the formula of Lewy for cerosie, $C^{24} H^{46} O$, which makes it an aldehyde, informs us that, "en traitant la cerosie par de la chaux potassée, M. Lewy a obtenu un acide blanc;" and of this acid, that "M. Lewy le représente par $C^{24} H^{46} O^2$, mais

cette composition ne me parait pas exacte ; l'auteur n'avait, du reste, pas assez de matiere pour approfondir ce sujet." In the original memoir of M. Lewy (see Comptes Rendus, t. xx. page 41) he says: "Je regrette beaucoup de n'avoir pas pu pousser plus loin mes expériences sur la cérosie, substance qui, à tout égard, aurait mérité une étude plus approfondie ; mais la petite quantité de matière m'a forcé de les interrompre."

Hence it appears that both of these chemists were unable to establish the nature of cerosie beyond all question, because neither of them had a sufficient quantity of the substance to make the requisite investigations.

On page 36 of my report I have said :

"A portion of the still moist feculencies being then carefully weighed, was thoroughly washed with alcohol of the strength of 95 per cent., and the mixture subjected to filtration on a counterpoised filter. The solid matter in the filter was gently and freely washed with fresh alcohol, after which it formed a perfectly dry pulverulent mass, and was equal in quantity to 11.04 per cent. of the original matter treated with alcohol. By evaporation this alcohol yielded 1.64 parts of *cerosie*, and a small portion of an essential oil ; it had therefore taken up 87.32 parts of water. Hence the scum examined is composed of 87.32 per cent. of water, and 12.68 per cent. of dry matter."

Concerning this passage, Mr. Avequin remarks (p. 37) : "*Cerosie* being entirely insoluble in alcohol, the professor has mistaken chlorophylle for *cerosie*!!!" It is true that *cerosie* is insoluble in alcohol, if the alcohol be cold ; but according to Mr. Avequin's own statement, "*elle est entièrement soluble dans l'alcool bouillant et ne s'en sépare point par le refroidissement. Plus l'alcool est fort, et mieux elle s'y dissout à chaud.*" This statement has been endorsed by M. Dumas (Ann. de Ch. et de Phys. t. 75, p. 222 ;) and I can also claim to know that it is true, for a specimen of *cerosie*, presented to me by Dr. Hort, Assayer of the New-Orleans Mint, and for another specimen in my possession—notwithstanding Mr. Avequin has asserted that I "described a substance which I do not know and have never seen." The account I have given of the analysis is brief, and it was not intended to furnish the details ; of this the reader may be convinced, if he will turn to that part of my report ; for he will find that I say *nothing* of the manner in which I determined the proportion of either the woody fibre, the albumen, the silica, the phosphate of lime, or the oxide of iron, all of which are enumerated as constituents of the dry matter. To a chemist, more minute statements would be unnecessary, to the practical reader, useless. And the reason why I mentioned the "washing with alcohol," is because I thus succeeded in drying a substance which could not have been freed from moisture in more usual ways ; and not because I also separated the *cerosie* by using *hot* alcohol. Of the temperature of the alcohol I said nothing ; Mr. Avequin, therefore, *assumed* that it was not heated ; an assumption for which he alone is responsible, and upon which he bases his assertion that I mistook chlorophylle for *cerosie*—a charitable explanation of what would rather have been wilful falsehood on my part, if his assumption were true, than such a mistake as he suggests. For the infor-

mation of the general reader, I will state that, because most bodies are more soluble in hot than in cold liquids, chemists usually heat the liquid which they employ for washing a precipitate, or other substance, when they desire to separate a soluble ingredient. Mr. Avequin was, therefore, not at liberty to assume that the alcohol used by me was cold, unless he be ignorant of the art of chemical analysis.

It is also a common practice with chemists to keep a detailed record of experimental operations; and from such a journal the first chapter of my report is but a digested compilation. I do not, therefore, depend upon memory alone, when I state that I used *hot* alcohol for washing the feculencies. The following is a copy of the original entry:

"Weighed out one ounce of feculencies (specimen No. 31;) digested in boiling alcohol, 0.95; washed on a counterpoised filter; dried in a capsule, weighing.....		1.4480 oz.
Capsule and dry contents.....		1.5584
Dry pulverulent residue.....		0.1104
Matter dissolved.....		0.8896
		1.0000
Evaporated the alcohol in a capsule, which weighed.....		1.4481 oz.
Capsule and cerosie.....		1.4645
Cerosie, etc.....		0.0164
		0.8896
Water.....		0.3732"

I admit that I was "inexact" when I said of cerosie, "a more full account of it, taken from *Mr. Avequin's* description and *analyses*, is given in the treatises on chemistry, both of Liebig and Dumas,"—for those analyses which I ascribed to Mr. Avequin were made by M. Dumas; and it does not appear that Mr. Avequin ever analyzed, or attempted to analyze, cerosie. Can this be the "specimen of mutilation and disfigurement of quotations" in which he is "directly concerned," and in relation to which, Mr. Avequin "exposes facts due to *his own* researches?" Or, when he tells you that:—"Cerosie may be considered as an alcohol, unique in its kind, since it is the only one which is found completely formed, and in a state of purity in nature. Its atomic formula is represented by $C^{24} H^{20} O = 24 (C H^2) + H^2 O$," and afterwards adds, "the facts that I have exposed in my letter, are *due to my own researches* on the sugar-cane; I *borrow nothing from those who have written on this subject*"—does he merely intend to say that *he* adopts M. Dumas' analyses and theoretical view of the chemical nature of cerosie? And when he also asserts, that I "would not believe that cerosie is an alcohol or an aldehyde, these substances have so little resemblance to each other," and that I have "described a substance which I do not know, which I have never seen, and the properties of which I disfigure," does he simply mean that, when I said "cerosie is a substance closely resembling bees-wax both in its appearance and its

properties," I failed to write a chapter on the theoretical views of modern chemists in regard to the classification of organic bodies generally, and Mr. Avequin's *cerosie* in particular; and that I had so little respect for the dignity and importance of this distinguished member of an alcohol or an aldehyde family, as to compare it to such an ignoble substance as bees-wax? After which it was, nevertheless, named by himself, before it aspired to belong to a more aristocratic family than that of the Waxes; and for the assigned reason, that its wax-derived name will recall its composition and some of its most important properties ("ce qui rapellera sa composition et quelques-unes de ses propriétés les plus importantes.")

Perhaps, however, when Mr. Avequin charges me with "quotations mutilated or disfigured," he did not intend that I should be permitted to cite his own original description of this "*Cire de la Canne a sucre*" in the *Journal de Pharmacie*, and that I should confine myself to my own references, or that "more full account taken from Mr. Avequin's description and analyses given in the treatises on Chemistry, both of Liebig and Dumas." If so, the reader will observe that I only referred to that account, and *did not quote* it. And if he will turn to the treatises, as indicated, he will find that Liebig ascribes its analyses to Dumas, and speaks of *cerosie* as "*une matière cireuse*," which he classifies among "*matières cireuses diverses*;" while M. Dumas has only abridged the description of Mr. Avequin and his own account of its analysis, but omitted to mention a second time of the formula which would make *cerosie* an alcohol, that it is "*une formule forte remarquable, qu'on regrette, faute de matière, de ne pouvoir controler par les recherches qu'elle indique.*"

I have now done with this "specimen" of "quotations mutilated or disfigured," with the issue "*Ab uno disce omnes*," by which my "exactness is to be judged," and with Mr. Avequin's *cerosie*; of the alcoholic nature of which he and others may enjoy their speculations, while "the planter may, for all his purposes, regard it as wax."

It was not, however, what I said, or would not believe, of *cerosie*, which has offended Mr. Avequin. It was that I *did not adopt or even mention his views and researches* with reference to the "saline matters," etc., in cane juice and molasses; those "researches" to which his "exposition of facts was due;" which prompted him to express his entirely "disinterested opinion" of my work; and to an account of which he devotes a large portion of his letter addressed to you.

Of his "researches," on page 40, Mr. Avequin very modestly says:

"The facts which I have placed before you have not yet been understood by all the planters. When they do understand them perfectly, the state, or rather the planters in a body, can offer a reward of \$100,000 to the person who will devise means for the total removal of these matters, previous to the crystallization of sugar; then, and then only, will there be no molasses."

"It will be not only one of the most magnificent discoveries made in chemistry, but one of the most useful; the services rendered to the planters would be incalculable, and could not be too highly recompensed."

Would it not be better to pay 100,000 to Mr. Avequin at once, and not put him to the great trouble of making new "researches" to establish his theoretical views? Certainly there can be no doubt of the correctness of those views, for although "the American chemist" did not mention them, M. Péligot,—“the French chemist, entrusted in 1842 with a similar work,” and who is endorsed by Mr. Avequin as “a man of distinction in his profession,” and as one who also “gave undeniable proof of his extensive knowledge of chemistry,”—does in page 31 of his memoir, *Sur la composition chimique de la canne à sucre de la Martinique*, speak of Mr. Avequin’s researches as:

“Recherches que je n’ai pas citées plus haut qu’elles sont faites pour confirmer les idées de Duttrône et de Proust sur cette plante; il y trouve dix-sept matières différentes, et il admet qu’elle contient du sucre non cristallisable.”

And of M. Péligot’s opinion of the novelty and value of the ideas of Duttrône and Proust, your readers may judge from another passage on page 8 of the same memoir:

“On retrouve avec étonnement toutes ces opinions de Cazaux, de Duttrône, de Proust, admises sans discussion, dans l’ouvrage le plus moderne qui traite de la réimpression en 1831 à Philadelphie. Dans son chapitre sur la composition du sucre; c’est un traité Anglais sur la nature et les propriétés du sucre de canne, par M. George Richardson Porter, publié à Londres en 1830, et jus de la canne, l’auteur traduit sans scrupule le chapitre de Duttrône sur ce sujet, et ne soupçonne même pas que, dans l’espace de cinquante ans, ces opinions aient pu être quelque peu modifiées par suite des progrès des sciences et des arts chimiques.”

I was also guilty of exposing my “own ideas on the defecation of the cane-juice,” instead of adopting “the theory of defecation” of Mr. Avequin; of this he tells you that “a similar explanation, written by a distinguished lawyer of New-Orleans, was inserted in your Review, vol. ii. p. 335, in the year 1846,” and that “errors and faults so glaring are willingly overlooked in this case, but they cannot be tolerated in a professor of chemistry.” Although in the opinion of Mr. Avequin this intolerable exposition “clearly demonstrates that the theory of defecation by the use of lime, or by a milk of lime, is as yet unknown” to me, I cannot even plead ignorance in extenuation of my neglect of his “theory;” for it is given in the article on Cane-Sugar in the sixth volume of the treatise on chemistry of M. Dumas (p. 218), which I read attentively at the time of writing my report; and in which article M. Dumas also embodies Mr. Avequin’s account of the saline matters in molasses, etc., (“voici d’après M. Avequin, à l’obligeance duquel nous devons les détails qui précèdent, les matières salines,” etc., etc., page 227.) The truth is simply that I had not, and do not now see reason to have faith in the theory and researches of Mr. Avequin, notwithstanding M. Dumas may have cited them in his work; and I “exposed my own ideas,” after examining the subject carefully, in the exercise of my independent judgment, because it was my duty so to do. I did not adopt Mr. Avequin’s notions, and I did not see fit to assail them; I, therefore, simply passed them over in silence. “In this have I offended.”

To my silence with reference to the “researches” of this gentle-

man there are, I believe, but two exceptions in my report; one is the paragraph on *cerosie*, already discussed, and the other is his analysis of the calcareous deposit which forms in the evaporating pans, which I gave on page 69 of my report, exactly as it is contained in and was copied from the treatise of M. Dumas (page 220, vol. vi.) I here quote the passage:

"This deposit has been analysed by Mr. Avequin, of New-Orleans, with the following results:

Sub-phosphate of lime,	-	-	-	-	-	92.5
Carbonate of lime,	-	-	-	-	-	1.4
Silica,	-	-	-	-	-	4.7
Phosphate of copper,	-	-	-	-	-	1.4

100.0

"Mr. Reynolds obtained somewhat analogous results from a specimen procured by me from the battery kettle upon the Saratoga sugar estate of Drake, Brothers & Co., in the island of Cuba; the analysis of which was as follows:

Organic matter and water,	-	-	-	-	-	54.72
Sub-phosphate of lime,	-	-	-	-	-	11.90
Carbonate of lime,	-	-	-	-	-	33.25
Silica,	-	-	-	-	-	00.13
Oxide of iron,	-	-	-	-	-	a trace.

100.00"

Although I have said that my assistant, "Mr. Reynolds, obtained somewhat similar results," (the degree of which similarity is, I confess, not very close,) this analysis of Mr. Avequin will serve to show that M. Dumas can sometimes yield too ready faith to "researches" unskilfully made, and even inadvertently commit errors in reporting them.

Let me refer the reader once more to the *Journal de Pharmacie*, t. xxvii. page 15, Paris, 1841, where he will find an article entitled: "*De la formation du cal dans les chaudières pendant la fabrication du sucre brut, (sucre de canne.)*" Par M. Avequin, pharmacien à la Nouvelle Orléans. And let me also "appeal to all persons who have the slightest knowledge of chemistry," to decide whether the "*Examen du cal*," contained in that article, was performed in a manner which would indicate that the writer possesses that requisite skill and familiar knowledge of the apparatus, manipulations and methods of modern analytical chemistry, which would entitle his "researches" to confidence, or render it "intolerable in a professor of chemistry" to pass them over in silence; even if this silence be not the result of unbelief but of "ignorance," to which Mr. Avequin would fain ascribe it.

I wish not to inflict upon your readers more words than are necessary; and, therefore, I shall not copy the whole article of Mr. Avequin, but make extracts from it. A few only will be sufficient. He says (page 16):

"La formation du cal dans les chaudières à sucre est due à la présence du biphosphate de chaux existant naturellement en très-grande quantité dans le jus de cannes; en y ajoutant un lait de chaux pour obtenir la déffécation, l'excès d'acide du biphosphate se trouve saturé par cette base: il en résulte un sous-phosphate insoluble, etc."

In this "très-grande quantité," I have no faith, for the analysis of Mr. Reynolds shows that a specimen of this deposit or "*cal*," contained 33·25 per cent. of carbonate of lime, and only 11·9 of sub-phosphate of lime, the residue being chiefly organic matter and water.

How happens it that Mr. Avequin does not also find 33·25 per cent. of carbonate of lime? And that, according to M. Dumas, he obtained 92·5 per. cent. instead of 11·9 of sub-phosphate of lime? The answer is short, and I give it in Mr. Avequin's own words:

"100 parties de cal, après avoir été calcinées pour détruire la matière sucrée et les autres matières végétales, présentent à peu près la composition suivante:

Sous-phosphate de chaux.....	92·43
Chaux en partie carbonatée.....	1·35
Silice.....	4·70
Phosphate de cuivre.....	1·41

99·89

Hence it appears from the words which I italicise, that Mr. Avequin *first calcined* the calcareous deposit, to destroy organic matter, and then analysed the residue! No wonder, then, that while Mr. Reynolds obtained 33·25 per cent. of carbonate of lime, Mr. Avequin tells us only of 1·35 per cent. of "*chaux en partie carbonatée*;" for he began by calcining (*for twenty-four hours!*) the substance which he proposed to analyze! There is an English phrase *to cook* an analysis, synonymous with the French "*bacler une analyse*," which Mr. Avequin has applied to my work, (page 24 of the Review.) To apply it to this case, it may justly be said that this *calcination for twenty-four hours* not only *cooked*, but literally *burnt up* Mr. Avequin's "examen du cal."

Let us see how he performed the operation, that we may judge whether he did it in the most approved style, and whether he can justly claim to be a skilful workman. He says of it:

"1,000 grammes de cal, après avoir été retirés de la chaudière à déséquer, comme il est dit plus haut, ont été chauffés à une chaleur modérée dans un creuset de Hesse, jusqu'à incinération parfaite. Dans le commencement de la combustion, il se dégage beaucoup de gaz hydrogène carboné qui brûle dans le creuset avec une flamme blanche bleuâtre; à mesure que la combustion avance, la flamme blanche disparaît et elle est remplacée par une flamme violette ou bleue. Il faut tenir le cal long-temps à une chaleur légèrement rouge avant d'obtenir une incinération parfaite. Ces 1,000 grammes de cal ont été réduits à 492 grammes après une de 24 heures."

Now what confidence can be placed in such work? An analysis begun by an incineration of 1,000 grammes, or *more than two pounds*, in a *Hessian* crucible, for *twenty-four* hours, and this in the year 1841!! Assuredly such a Vulcan-like proceeding is in strict accordance with the modern style of substituting the neat spirit-lamp and mouth-blowpipe for the clumsy furnace and rough bellows of the alchemist; delicate vessels of platinum or porcelain for those of coarse earthenware; and very small quantities of matter for the large masses which used to be operated upon in days of yore, with such lavish waste of time, labor and materials!

Of this incineration of 1,000 grammes, which required so much time and trouble, and displayed such beautiful flames, what does M. Dumas say? Not one word! Of the calcareous deposit itself he says only:

"La défécation opérée par la chaux donne naissance à un dépôt de sous-phosphate de chaux. Cette matière s'attache à la chaudière à déféquer ainsi qu'aux chaudières suivantes, et elle y constitue une croûte épaisse qui est connue sous le nom de *cal*. Lorsque l'épaisseur du cal devient trop forte, on chauffe la chaudière à sec et on dilate assez le métal pour obliger le cal à se fendre et à se détacher. La formation de ce produit entraîne beaucoup d'inconvénients faciles à comprendre, pendant la durée de l'évaporation. Voici sa composition d'après M. Avequin:

Sous-phosphate de chaux.....	92.5
Carbonate de chaux.....	1.4
Silice.....	4.7
Phosphate de cuivre.....	1.4

100.0"

You may now judge whether M. Dumas has given the composition of this "*cal*," or calcareous deposit correctly, and in accordance with Mr. Avequin's original paper in the *Journal de Pharmacie*. Has the distinguished French chemist "mutilated or disfigured" Mr. Avequin's "researches?" In view of his well-known accuracy, is it at all likely that M. Dumas took his description directly from Mr. Avequin's article in the *Journal de Pharmacie*, where the words "*après avoir été calcinées*" so closely precede the statement of the composition? And is it not more probable that he extracted his account from some of those statements of details furnished by Mr. Avequin, to which he alludes when he uses the above-mentioned words: "voici d'après M. Avequin, à l'obligeance duquel nous devons les détails qui précèdent?"

Finally, in page 61 of the report of M. Pélégot to Admiral Duperré, Paris, 1843, to which Mr. Avequin refers, (page 40,) in terms of dissatisfaction, while he at the same time endorses the professional ability of the author, the latter says:

"M. Avequin attribue la formation si fâcheuse de cette substance au biphosphate de chaux, qui selon lui, existe en très grande quantité dans la canne; mais, outre que cette dernière assertion est en contradiction avec toutes les analyses qui prouvent que le phosphate de chaux n'existe pas en plus forte portion dans cette plante que dans les sucres séveux des autres végétaux, l'examen qu'il a fait de cette substance, examen qui laisse, d'ailleurs, beaucoup à désirer, conduit à une conclusion toute différente de la sienne."

Your readers can now decide for themselves whether Mr. Avequin's "researches" are more entitled to credit because they may have been communicated to M. Dumas, and noticed by the latter in his treatise on Chemistry Applied to the Arts; and whether, also, a certain "distinguished lawyer" of New-Orleans and "a professor of chemistry" have committed any "glaring errors and faults" by "exposing their own ideas on the defecation of cane juice." I take leave of those "researches" with the declaration that I have not the least objection to the proposed reward of \$100,000 being offered by the planters, if they see fit.

Mr. Avequin seems to be very much perplexed, page 28, with my statement that a specimen of cane juice was "of the specific gravity 1·085, corresponding to 10° Baumé of the brass instrument I employed, but to 11° Baumé as indicated by the glass *pèse-sirop* belonging to Mr. Duggan." After asking "what can we think of that?" and pronouncing me unworthy of "confidence" as "an experimentalist" by reason of it, he triumphantly concludes as follows:

"Had the juice upon which the professor made his experiments a density of 1·085? Or did it weigh 10° in the *pèse-sirop* of Baumé? Or did it mark 11° in this same instrument? *Fiat lux!* For us, we will tell him that 1·085 density corresponds exactly to 11 1·2° of the *pèse-sirop* of Baumé, which makes a pretty considerable difference in its richness of sugar. We will show him this further on."

Now while I would be perfectly willing to receive knowledge, of which I may be ignorant, from Mr. Avequin, as well as from others, if properly communicated, I cannot accept from him erroneous assertions about matters of fact, concerning which I am well informed; especially, when those assertions are coupled with the imputation to myself of gross "negligence," and want of professional ability, because carefully performed experiments do not seem to confirm what he professes to have "established twelve years ago."

With regard to this "*Fiat lux!*" or most authoritative assertion that "1·085 density corresponds exactly to 11 1·2° of the *pèse-sirop* of Baumé," let the reader refer to standard works written by the most eminent scientific men, and to the most skilful experimental inquiries heretofore made by various persons, and he will find extremely discordant results given by them, in relation to the densities which correspond to the degrees of Baumé's hydrometers. For those who have not such books as this reference calls for, I here annex a short table of comparative data, compiled from the authorities whose names are above the vertical columns:

Degrees of Baumé's <i>Pèse-sirop</i> .	Corresponding densities, or specific gravities.				
	Berzelius	Francœur	Delemaire	Payen	
3°	1·020	1·019	1·0201	1·0219	1·026
6	1·040	1·038	1·0411	1·0448	1·052
9	1·064	1·057	1·0630	1·0687	1·080
12	1·089	1·064	1·0857	1·0937	1·106
15	1·114		1·1095	1·1200	1·142
28	1·140	1·118	1·1343	1·1475	1·168
41	1·170		1·1603	1·1764	1·187
24	1·200	1·161	1·1875	1·2068	1·213
27	1·230		1·2160	1·2389	1·254
30	1·261	1·210	1·2459	1·2727	1·276

Of the first two columns of this table, (see page 103, vol. viii. first edition of Berz. *Traité de Chim.*) Berzelius says: "on voit donc, d'après le défaut d'accord entre les nombres à quel point la base admise par Baumé est inexacte."

In his excellent remarks, (*Mémoire sur l'Aréométrie*, page 25, Paris, 1842.) M. Francœur, says:

"Des expériences ont été faites par un grand nombre de savants pour trouver

les densités des liquides correspondantes aux divers degrés des aréomètres de Baumé, et leurs résultats sont discordants. Guyton, d'Arcet, Vauquelin, Bringley, Ure, Klaproth, Nicholson, etc., ont publié des tables de ce genre, et les chiffres présentent des différences notables. J'ai moi-même tenté des expériences avec des aréomètres que je devais croire exacts, et je n'ai pu obtenir des résultats satisfaisants."

He also remarks, (page 24) after speaking of the defects of Baumé's hydrometers :

" Enfin, l'en n'a aucun moyen de vérifier l'exactitude de l'échelle d'un instrument, et l'on doit s'en fier à l'habileté et à la conscience du constructeur. Que la fabrication des thermomètres est supérieure, sous ce rapport, à celle des aréomètres !"

Finally, that it may appear that I knew something of the imperfection of Baumé's *pèse-sirop*, and of what I was about when I took the specific gravity 1.085 of a specimen of cane-juice, and at the same time observed and recorded the discordant indications 10° and 11° of two different instruments, your readers may refer to my first report on sugar, syrups, hydrometers, etc., made in 1845, (a year before I went to Cuba,) and published in Senate Doc. No. 165, 28th Congress, 2nd Session ; in which they will find, (page 20) that I have said : " the instrument of Baumé often varies, however, even by whole degrees ;" and that I have also discussed, (page 65,) the cause of this variation.

From the preceding facts, the reader can readily answer Mr. Avequin's question :

" What confidence can we place in an experimentalist who has not even proved his saccharometer ?—who, before making his experiments, has not assured himself that it was exact ?"

And he may, if he pleases, answer another question, to wit :—what confidence can be placed in the statements of a man who ventures to make dogmatical assertions about matters of which he is ignorant ?

But what are the experiments which Mr. Avequin tells you are unworthy of confidence, because the " experimentalist" did " not prove his saccharometer ?" They are entitled " comparative experiments on the yield in juice of the three varieties of cane." They are described in such a manner, that Mr. Avequin himself says of the description : " all this is very clear, and no person, however simple, can be deceived." They profess to be facts observed and recorded, with all the care and precision of minute weighing with a delicate balance and exact weights, in relation to quantities not too large to be easily managed by the experimenter himself ; and of which facts he is, therefore, the immediate and responsible witness. They also show truths which flow as consequences from them. What fault then has Mr. Avequin to find with them ? Forsooth ! they do not accord with " experiments made by me and those made by M. Péligré of Paris," and therefore, " it is not possible to push negligence further." Concerning the experiments of M. Péligré, let the reader bear in mind that he never left Paris when he undertook to make researches on the sugar-cane of the French West In-

dies, and that he entrusted to others all the business of collecting and sending him materials. After expressing his *opinion* ("je pense") in p. 24 of his report, that the average proportion of woody fibre is from nine to eleven per cent. in mature canes, M. Pélilot informs the reader that, "cette conclusion ne semble pas d'accord avec les résultats obtenus à la Martinique par M. Guignod, assisté de plusieurs délégués de la Société d'Agriculture de cette colonie," and that M. Guignod found 13 per cent. of woody fibre. He then proceeds to show how "il est très probable que ce désaccord n'est qu'apparent," and the argument he employs is directly applicable to my experiments which Mr. Avequin condemns; which argument is however of somewhat doubtful validity. Also, on pages 40 to 45 of his report, M. Pélilot states the results of a number of his experiments, which gave for the proportion of woody fibre in canes of different ages, etc. the limits 7.9 to 17.5 per cent! Are these variations only apparent? Or is this "negligence which it would be impossible to push farther?" The whole story is simply that the proportion of woody fibre varies considerably in canes of different ages, sizes, etc. While, therefore, I maintain the truth of my own work, I am willing to admit that M. Pélilot and Mr. Avequin may have correctly obtained somewhat different results from different materials.

I pass over the other criticisms of Mr. Avequin concerning matters which relate solely to my work; not for the reason that they may not be easily answered, but that I have already consumed more of my own time, and of the reader's attention, than I consider them entitled to receive. There is one thing, however, which should not be permitted to go unnoticed or perhaps unrebuked; I refer to what Mr. Avequin has said of the valuable and most beautiful method of ascertaining the proportion of crystallizable sugar contained in any substance by means of the circular polarization of light,—a method discovered and brought to a very high degree of perfection by M. Biot, one of the most eminent scientific men of France; and of which Mr. Avequin says, (p. 35):

"This method (that is, the one used by Professor McCulloch, for it is not his own,) is remarkable for its elegant and seducing simplicity. This cannot be denied; and persons having only a superficial knowledge of mathematics, and who are ignorant of chemistry, will readily yield to its influence, because they see an algebraic formula applied to a chemical analysis. But we must beware, and fortify ourselves against all this species of seduction."

Also, on pages 25 and 26, he says:

"The process followed with a little too much confidence by the professor, in the experiments on molasses and raw sugar, has been tried in France long ago. The principal fault of this method is, that it is only applicable to the simple cases of a dissolution of *pure sugar* in water. If the liquid sugar to be examined contain foreign substances in solution, matters gummy, mucous, lactose, glucon, glutinous, saccharates, in general, the hydrate of carbon and other substances badly defined, mineral and organic salts, they act in the same manner as crystallizable sugar, and lead the operator into error. In acting upon a solution of pure sugar, the mistakes are not less than from two to three per cent.; but in acting upon molasses, they become monstrous! I will return again to this subject."

"In estimating the quality of foreign molasses arriving in the northern ports, the professor has made serious mistakes; but, with the assistance of his favorite algebraic formula, and some logarithms, he arranges all that in the most elegant manner in the world; he extricates himself from this false position like a skillful man; to embellish his errors, he adorns them in a mathematical form! To say the least, it seems to me ridiculous to apply a learned algebraic formula to an experiment on molasses. We ought to have recourse to these means only when acting upon bodies perfectly well defined, admitted by all the chemists, and of which the elementary composition is known. Otherwise, I repeat it, we are subject to fall into serious mistakes."

There certainly was no necessity in a review of my report for Mr. Avequin's parenthesis ("that is the one *used* by Professor M'Culloh, for it is not his own.") In the introduction to that report I have myself said (page 4): "the method employed and chiefly relied upon in the analyses was that of M. Biot, based upon the circular polarization of light, originally described in the *Comptes Rendus des Séances*, and in the *Mémoires de l'Académie*, etc." And on page 23. I again refer to M. Biot's researches, as well as to a former report, (Sen. Doc. No. 165, 28th Cong.) in which I have given a full account of those researches, carefully compiled from and *accredited* to his original memoirs.

While I am not gifted with that degree of self-esteem which professes to "*borrow nothing from the writings of others*;" and while I rejoice that, in this land of liberty, knowledge, which the art of printing perpetuates and disseminates over the world, may be "*used*" as freely as the light of heaven, or the air which we breathe; I yet may truly say, that I always endeavor to "render to Cæsar the things which be Cæsar's," and that I have never sought to pluck or injure a single leaf of the laurel which adorns the brow of one of the most distinguished of French philosophers,—one who has spent a long life in scientific labors which have greatly increased the fund of human knowledge, and to whom, now venerable for his age, all younger votaries of science delight to pay the just tribute of their admiration, their reverence, and their esteem.

To the subject of the application of circular polarized light to chemical researches, M. Biot has for many years devoted much of his time and attention; and though Mr. Avequin speaks of it as a "process followed with a little too much confidence by the professor, and *tried in France long ago*," as if it was an old and exploded fancy, some of your readers doubtless know that it has again and again received the endorsement of the Academy of Sciences of Paris,—a body fully competent to judge of the merits of such matters. And if they will turn to the number of the *Comptes Rendus des Séances de l'Académie*, p. 240, t. XXVI, of February 21, 1848, *not very long ago*, they will there find the report of a committee composed of MM. Arago, Regnault and Babinet, (names not unknown to fame,) bestowing upon "cette curieuse branche d'optique industrielle," their most unqualified commendation; and in which report we also find the following statement:

"On sait que cette curieuse propriété d'inversion dans le sens du pouvoir rotatoire, si bien utilisée par M. Biot, appartient exclusivement au sucre de canne (C24, H22, O11), que l'on extrait encore de plusieurs autres végétaux, et qu'elle sert à reconnaître la quantité de ce sucre engagée dans un mélange quelconque."

Let the reader observe the words which I have italicized ; let him bear in mind that " MM. les Secrétaires Perpétuels" have also said in the name of the Academy : " les conclusions de ce Rapport sont adoptées ;" and then let him decide for himself which of the two opinions of this method is most worthy of credit, that of the Academy of Sciences of Paris, officially published in February, 1848, which pronounces it to be one which serves to determine the quantity of sugar contained in *any mixture whatever*, or that of Mr. Avequin, who says : " the principal fault of this method is that it is only applicable to the simple cases of dissolution of *pure sugar* in water."

All that Mr. Avequin says of this optical method of M. Biot proves only his entire ignorance upon the subject ; and as for his criticism, that " it seems ridiculous to apply a learned algebraic formula to an experiment on molasses," I merely observe that algebra usually performs neatly and clearly what arithmetic attains clumsily and obscurely, and that no great amount of learning is required to understand or make simple algebraical calculations. But when a bungling and *erroneous* arithmetical operation is brought forward as a method of " the most rigorous exactness ;" as one " in which all the chemists in the world have confidence ;" as " the old method *which I use myself* ;" and which is, *therefore*, " beyond all doubt more exact than that used by the professor," discovered by M. Biot and approved by the Academy of Sciences of Paris, though " infinitely more defective than the old one,"—what shall we say or think of such assurance and self-esteem ? Is it of the degree which is offensive, and which may often be corrected by ridicule ? Or is it of that degree which ceases to offend because it amuses ; upon which ridicule is expended in vain ? Or is it not rather of the still higher degree, which causes no emotion but that of pity for the misfortune of its possessor ?

Mr. Avequin tells you that he " will return to this whole matter if there be any occasion for it." Let him do so, if he pleases, and as often as he may see fit ; probably it will not interrupt me in the devotion of my time and attention to other subjects, or put me to the trouble of writing another word ; certainly it will not offend me. And the only feeling which his attack causes me to entertain in regard to him is one of regret that, by attempting to lead others into error, he has compelled me to say things which may possibly cause them to believe his scientific pretensions to be only a dream which his fancy fondly cherishes,—a dream which I refrained from disturbing, and would fain have permitted him to enjoy in peaceful satisfaction.

I now turn to Mr. Valcour Aime's review, published in your Journal for March, 1848. In the first place, I will state generally that, so far from objecting that the errors in my several reports should be pointed out and corrected, I desire that it should be done. The United States Senate, at the instance of one of its members from Louisiana, recently ordered them to be re-printed in a single document, under my revision. The truths which they contain I

shall in this re-publication continue to assert. The errors, if known to me, I will in every instance endeavor to correct; and I shall be happy to receive from Mr. V. Aime, or any other gentleman, either through private or public channels, information which will enable me the better to perform my task, as well as to do justice to the sugar industry of Louisiana. I have no personal or other interest to promote, no prejudices to lay aside, no theories to maintain. The truth, and nothing but the truth, is all that I desire to believe or to publish.

Mr. Valcour Aime correctly represents the facts connected with my visit to Louisiana, as I have myself given them in my letter to Professor Bache, which forms part of the introduction to my second report. Of the shortness of that visit he says (page 255):

"The stay of Mr. McCulloh in the state was, as I observed before, so very short, that he had no time to become well acquainted with the former situation of our sugar industry, and the various successful steps that have been taken to improve it. It is, no doubt, on that account that he has in the different parts of his report alluded somewhat unfavorably to our improvements."

It is true that I did not spend sufficient time in Louisiana to obtain all the information which I desired and considered important. I have already mentioned some of the circumstances which prevented my accomplishing more than I did. But that it may fully appear that I made the best use of my time, and that I did not shorten my stay unnecessarily, I will now also state that, during several of the few days which I spent in New-Orleans, while under orders to proceed with as little delay as practicable to Cuba, I was confined to bed by sickness. And when, after completing my work in Cuba, I was about to return to Louisiana to study the sugar industry of the state, I received at Havana a letter directing me to return at once to Philadelphia, where my services were needed and required in the Mint. A similar and still more urgent letter awaited my arrival at New-Orleans. I could not, therefore, protract my visit a day longer than I considered absolutely necessary; and if I devoted my time chiefly to inquiries about Rillieux's apparatus, it was because that apparatus was the only one in use of which I possessed no knowledge. I caused to be printed, both in English and French, a circular containing numerous interrogatories, which I left with gentlemen of the highest respectability in New-Orleans, to be given to the planters. I regret that I never received answers to any of those interrogatories. This fact I mention only in justice to myself; and although I was aware that gentlemen engaged in the sugar industry might shrink from communicating facts which they would conclude must be generally known, lest they should seem presumptuous, yet I would have been, and shall still be, glad to obtain much of the information asked for in that circular from any of the planters.

If in anything I may have said, I have done injustice to Mr. Valcour Aime, or to the other planters of Louisiana, individually or collectively, it has been solely from want of information; and in the re-publication of my reports, I will cheerfully render them all credit

which they justly claim, if they will enable me to do so by furnishing me with the requisite facts.

I am sorry to be obliged to differ slightly from Mr. Valcour Aime, with reference to a passage in my report, which he quotes (page 250,) and subsequently comments upon. The passage is as follows :

"The well-managed sugar estates, (furnished with highly finished and costly machinery,) which I visited, and which had each required, on an average, an investment of not less than two or three hundred thousand dollars, in fixed capital, had entirely dispelled from my mind all preconceived notions derogatory to the enterprise and intelligence of the Spanish creole; though under an oppressive government, and compared with that of a Louisiana planter, enjoying all the blessings of political freedom, exempt from heavy taxes, and protected against foreign competition by a high tariff."

I am willing to admit that Mr. Valcour Aime's inference, that the planters of Louisiana are here represented to be "in the arrear," may be and has been justly drawn from the language I employed; for it would warrant the inference. And I, therefore, take pleasure in disclaiming the interpretation which has been put upon my words. To the planters of Louisiana it is certainly of no consequence what I may or may not think of them; but I probably owe it to myself to say, that I do not consider, and never intended to represent them as inferior to those of Cuba. On the contrary, in view of the great comparative disadvantages of climate under which they labor, I am convinced that in Louisiana much greater skill is requisite and generally attained; and I am confident that in no part of the world is the culture and manufacture of sugar as well understood and practised as in that state. But while I freely acknowledge the agricultural and manufacturing superiority of the Louisiana planter, I can go no further.

I cannot again believe "those preconceived notions derogatory to the enterprise and intelligence of the Spanish creole," which were "entirely dispelled from my mind" by the first estates which I visited in the island of Cuba; and which would never have been entertained by me, if I had not been, in common with very many of the citizens of our country, misled by hearsay statements, calculated to give any but favorable views of the energy, intelligence and virtues of a most estimable people.

I have said :

"The planters of Cuba, whether we judge them by the progress made in improvements, by the skill exercised in the operations of manufacture, by the judicious management of their estates, or by the information and intelligence they display, must certainly be considered the equals of our own fellow-citizens; and that they do not realize far greater profits from their industry, is to be attributed not to inferiority, but to the tyranny of Spain."

In this, I did not mean to compare them particularly with the citizens of Louisiana, but with those of every part of the United States. I may justly claim to have seen much of our country, to have mingled freely with every class of its citizens, and to know something of them. I esteem them; I admire them. There is not another people on earth so blessed with happiness, knowledge, and

intelligence, and every virtue. I am proud of my countrymen, proud to claim fellowship with them, at home or abroad. This is not boastfulness, it is simply the truth. But I should be unjust to the creole population of Cuba, to the humble *montero* as well as to the wealthy planter, if I were to say of them that they are our inferiors. They are no mongrel race, like the population of Mexico; the purest blood of ancient Spain flows unmingled in their veins. The ashes of Columbus repose in the cathedral of Havana, and the people of the island are worthy descendants of his followers. I have observed them carefully; and I know them well, for I have been under their roofs and among them long enough to become acquainted with them. They inherit, and are by nature endowed with the noblest faculties. In his hut, made of the wood and thatched with the leaves of the royal palm, (*palma real*,) the poorest *montero* welcomes and presents you to his family with the manners of a polished gentleman; unconsciously displaying those domestic and social virtues which dignify and exalt human nature, however humble the lot of their possessor. Between the educated and refined society of Cuba and that of our Southern states, an American will perceive no difference, but that they speak another language. And on a plantation in Cuba, if he be familiar with southern life in our own country, he will find himself perfectly at home. Indeed, were he not surrounded by tropical plants and scenery, and constantly listening to the sounds of a foreign tongue, he might readily imagine himself to be still in the land of his birth. Yet, not unfrequently, some petty tyranny, growing out of the avarice of the captain of the *partido*, or a much grosser outrage, may call his attention to the fact that he is no longer in a land of liberty, but under military despotism. And a friendly visit from the good-natured *padre* may serve occasionally to remind him that the faith of the Roman Catholic Church is the only religion tolerated by the Spanish Government.

In all this, Mr. Valcour Aime and myself do probably agree, for he has not expressed his opinion of the people of Cuba in his review of my report, and I do not presume that it can be unfavorable. He objects only to my comparison of the planters of that island to those of Louisiana, with reference to the skill and advantages possessed by each; and considers me inaccurate in my statement, that the sugar estates of Guines are "well managed and furnished with highly finished and costly machinery," and that they "have each required, on an average, an investment of not less than two or three hundred thousand dollars, in fixed capital." I am perfectly willing to be corrected by Mr. Valcour Aime, with reference to the ownership of the Amistad estate, and to allow that it probably belongs to a charming widow, instead of her brothers, as stated by me; also that the Dégrand apparatus upon it "did not probably cost more than 25,000 dollars," instead of 50,000 dollars, "as currently reported in Guines," and as told to me, not, however, by the owner or her son, for I have not the honor of their acquaintance. But I am unwilling to admit, because Messrs. Valcour Aime and Lapice, experienced planters of Louisiana, "discovered nothing, in their visit to Guines, either in the general management of the sugar es-

tates, or in the buildings and improvements, which deserved peculiar praise," that I was wrong in praising them, in abandoning my prejudices, and in saying of them that they were "well managed, and furnished with highly finished and costly machinery." Upon the *high* finish of the machinery I will not insist, but of its excellence and costliness generally in the island of Cuba, being usually of American or English manufacture, there can be no doubt; notwithstanding it is admitted, as Mr. V. Aime says, free of duty.

I am equally unwilling to admit that I have erred in estimating the investment required by a sugar estate in Cuba at "not less than two or three hundred thousand dollars, in fixed capital;" though this estimate is probably excessive for the estates of Guines. It was based upon information concerning the value of estates in other parts of the island, considered by me not much unlike those of that particular district; and the language employed is loose and indefinite. I went to some trouble to obtain authentic data in relation to the values of estates in the island generally; and until it be clearly shown that I have been deceived, in which case I will bow to conviction and cheerfully adopt the truth, whatever it may be, I shall continue to believe the probable average value of a sugar estate in Cuba to be two or three hundred thousand dollars. One hundred thousand dollars is, I believe, the cost of a small estate, manufacturing about one thousand boxes of clayed, or five hundred hogsheads of muscovado sugar; and three hundred and fifty thousand dollars that of a very large estate, producing five thousand boxes of clayed sugar.

In reference to this matter, as well as to some others in which Mr. Valcour Aime and myself differ, I submit the following detailed statement; for the authenticity of which I can vouch. It may, however, contain errors, for which I am not responsible. I give it as it was furnished to me:

VALUE OF A SUGAR ESTATE IN CUBA, WITH ALL ITS APPURTENANCES,
MARCH, 1846.

LANDS.—55½ caballerias* at \$1,000,	-	-	-	-	\$55,500 00
28 of which are in cane					
8 " " pastures					
2 " " vegetables					
3 " " fallow					
14½ " " woods					
CROP.—20 caballerias of cane in good condition, at \$1,200	-	-	-	24,000 00	
8 ditto in poor condition	-	-	-	4,000 00	
25,000 plaintain trees at 12½ cts.	-	-	-	3,125 00	
Orchard trees, &c.	-	-	-	100 00	
					31,225 00
ANIMALS.—125½ yoke of oxen at \$59,50	-	-	-	7,467 25	
30 mules, \$51,00	-	-	-	1,530 00	
5 horses, 34,00	-	-	-	170 00	
15 cows, 25,00	-	-	-	375 00	
24 calves, 5,00	-	-	-	120 00	
267 sheep, 1,00	-	-	-	267 00	
					2,922 25

* One caballeria is equal to 33½ acres.

NEGROES.—4 negro overseers at \$600 - -				2,400 00
1	"	machinist "	650 - -	650 00
11	prime men			
	1st class	"	550 - -	6,050 00
13	prime men			
	2d class	"	500 - -	6,500 00
31	able men			
	1st class	"	450 - -	13,950 00
57	able negroes	"	400 - -	22,800 00
28	"	"	350 - -	9,800 00
12	"	"	300 - -	3,600 00
2	"	"	250 - -	500 00
10	"	"	200 - -	2,000 00
3	"	"	150 - -	450 00
10	negro boys	"	100 - -	1,000 00
6	"	"	50 - -	300 00
6	negro women (prime)	400 - -		2,400 00
49	"	350 - -		17,150 00
22	"	300 - -		6,600 00
9	"	250 - -		2,250 00
8	negro girls	200 - -		1,600 00
6	"	150 - -		900 00
4	"	120 - -		480 00
4	"	100 - -		400 00
12	"	50 - -		600 00
				70,000 00
				32,380 00

BUILDING.—One large engine and boiling-house,		
250 feet long, of widths from 70 to 100 feet,		
with two steam-engines, four trains sugar pans		
of iron, on the Jamaica plan, and all neces-		
sary appurtenances, - - - - -		32,000 00
Two large purging-houses, built of stone and		
wood, with tiled roofs, for claying 11,000 pots		
of sugar, with railway conveniences, cars for		
railway, and machinery for raising and mix-		
ing clay, &c. - - - - -		25,000 00
One large stone dwelling-house, with yard and		
garden attached, - - - - -		4,000 00
One large square block of stone-buildings, 52		
rooms, and yard in centre, for negro dwellings,		
size 300 by 200 feet, - - - - -		6,000 00
One square stone building, with yard in centre,		
divided into several large rooms, for a hos-		
pital, - - - - -		2,500 00
One large stone building, including the furnace		
for drying sugar, and the packing-room, -		6,000 00
One large house, 180 by 70 feet, for the purpose		
of drying cane-trash, with railways from the		
mill, &c. - - - - -		2,700 00
One small divided dwelling of stone, for the		
engineer and mayoral (overseer,) - - -		1,500 00
One clock steeple, with clock and bell, - -		800 00
One stable for fourteen horses, - - - -		350 00
One coach-house, - - - - -		350 00
One small pump-house, - - - - -		250 00

THE SUGAR-CANE.

350
000

Other minor buildings on different parts of the estate, - - - - -	725 00	88,175 00
IMPROVEMENTS. —One large stone reservoir for holding 12,000 cubic yards of water, - -	5,000 00	
One smaller ditto for watering cattle, - -	2,000 00	
One large stone water tank, to contain 70 pipes of water, - - - - -	800 00	
One well, 180 feet deep, with tanks, buckets and machinery for drawing water, - -	500 00	
Three wells on different parts of the estate, - -	500 00	
One bell-post and bell weighing 800 pounds, -	500 00	
One kiln for burning tiles and bricks, - -	300 00	
One lime kiln, - - - - -	200 00	
One railway from the boiling-house to the purging-house, - - - - -	300 00	
One railway for discharging the clay at a distance from the buildings, - - - - -	200 00	
One railway for conveying fuel from the bagasa-house to the furnaces, - - - - -	200 00	
One railway and cars for conveying sugar to the drying-house, - - - - -	300 00	
4,848 fathoms of stone fence or wall, on the boundaries of the estate, at \$1.00, - -	4,848 00	
1,140 fathoms of hedge fence at 25 cts. - -	285 00	
One large stone bridge and embankment over a stream on the estate, - - - - -	1,000 00	
Several small stone bridges and stone drains for water on different parts of the estate, - -	2,000 00	
Two fire-engines, with hose, buckets, &c. -	1,000 00	
Tools and utensils of every sort, including 34 ox-carts, those of the carpenters, masons, engineer, &c. - - - - -	2,221 00	22,154 00
Sum total, - - - - -		\$309,363 25

RECAPITULATION.

Lands, ...	\$55,500 00
Crop, ...	31,225 00
Animals, ...	9,929 25
Negroes, ...	102,380 00
Buildings, ...	88,175 00
Improvements, ...	22,154 00
Total, ...	\$309,363 25

EXPENSES OF THE SAME ANNUALLY.

In cattle, horses and mules, - - - - -	\$2,300 00
Annual consumption of meat for 310 negroes, 140 lbs. at \$6 per 100 lbs. - - - - -	2,604 00
Annual consumption of corn, 325 lbs. per day, at \$1.20 per 100 lbs. - - - - -	1,423 50
600 mule loads of plantains at 75 cents, - -	600 00
Clothing at \$3.50 per head, - - - - -	1,085 00

2,012 50

Salary of administrator (agent,) - - -	2,000 00	
" engineer, - - -	1,200 00	
" mayoral (overseer,) - - -	500 00	
" mayordomo (clerk,) - - -	480 00	
" physician, - - -	510 00	
" two sugar boilers for six months, -	1,200 00	
" carpenters, - - -	1,000 00	
" ploughman, - - -	300 00	
" mule-driver, - - -	300 00	
" men to take care of cattle, - - -	360 00	
		7,850 00
Freight of transportation by mules of 4000 boxes of sugar from the estate to the place of ship- ment, including storage at \$1.75 per box, -	7,000 00	
4000 boxes at \$1 per box, - - -	4,000 00	
450 hides at \$2.50, - - -	1,125 00	
40 kegs of 10 and 12 penny nails at \$8, -	320 00	
15 kegs of 4 penny nails at \$8, - - -	120 00	
		12,565 00
Tax of 2½ per cent. on the value of the estate, -	7,734 00	
Loss in negroes by death and total extinction of their value at fifty years, - - -	5,119 00	
Minor expenses, including the hospital and medicine bill, - - -	2,143 00	
		14,996 00
Total, - - -		\$43,423 50

PRODUCE OF 4,000 BOXES, THE AVERAGE ANNUAL CROP.

1,333 boxes of white sugar at \$4.50 per 100 lbs., 425 lbs. per box, - - -	\$25,493 62	
1,333 boxes of brown sugar at \$3 per 100 lbs. -	16,995 75	
1,334 boxes of <i>cucuruche</i> brown at \$2.50 per 100 lbs. - - -	14,173 75	
4,000 boxes, &c., paid by merchants at \$3.25 per box, - - -	13,000 00	
800 hogsheads of molasses at \$2.50, - - -	2,000 00	
		\$71,663 12
Deduct expenses, - - -	- - -	43,423 50
Net profits, - - -	- - -	\$28,239 62

Of Mr. Valcour Aime's remark, that :

" If the sugar estates which the Professor has seen near Guines had each required on an average, as he was made to believe, an investment of *not less than two or three hundred thousand dollars, in fixed capital*, our northern citizens might well have asked why we complain of not getting four cents for our sugar when the people of Cuba can afford to give theirs for two cents, after undergoing such enormous expenses."

I would simply say, that I fear it will always be difficult to persuade consumers that they should purchase at high prices rather than at low. And of his subsequent remark concerning myself, that :

" Among the advantages which he enumerates as flowing from that government he might very well have left out, in a report printed in 1847, the protection against foreign competition by a *high tariff*."

I will observe, that the tariff to which I referred was that which was in operation when I was in Cuba, the tariff of 1842, levying upon brown sugars the duty of $2\frac{1}{2}$ cents per pound, and 4 cents upon white clayed,—rates which certainly were high if the planters of Cuba can afford to sell their sugars at two cents, as Mr. V. Aime asserts. And if my allusion to a tariff be supposed to have been the expression of political opinion, I disavow all such intention. In the execution of the scientific work entrusted to me by the government, I have studiously endeavored to abstain from all interference with questions of policy and conflicting sectional interests; and if the allusion to the protection of a high tariff be an infringement of this rule, it was purely accidental.

Mr. Valcour Aime points out very correctly and forcibly the great advantages of the climate of Cuba over that of Louisiana for the production of sugar. But I cannot agree with him in the following remarks :

“The slaves, by which their canes are cultivated, are, in spite of the suppression of the slave trade, imported from Africa at a cost which on an average does not exceed for each the price in Louisiana of a good pair of mules. The climate permits these slaves to be worked with as few clothes as they were in the habit of wearing in their native country. A patch of bananas, which, when once planted, gives every year a new crop from the sprouts, is all the feeding they require; whilst our slaves are generally at least as well fed and clothed as laborers are in Europe.”

I do not deny that slaves are still brought from Africa to Cuba, nor do I mean even to palliate the slave trade, which is now as universally as it is justly condemned; though I believe that the share which Cuba has in it is to be censured far less severely than the heartless avarice of those who continue to prosecute it, and who dwell in northern climes.

Of the price of a good pair of mules in Louisiana, I have no knowledge; yet I have a vague impression of having heard of enormous fancy prices being there paid for large animals of that kind. But it is well known, that in Cuba negroes are divided into three kinds or classes: *criollos*, creole negroes; *ladinos*, those who have acquired the Spanish language, and who were imported several years ago; and *bozales*, recently from Africa, and speaking only their native tongue. Of these negroes the *criollos* are by far the most intelligent, virtuous and efficient; they therefore command good prices. Next in value are the *ladinos*, if able-bodied; and lastly, the *bozales* are mere savages, ignorant of civilization, stupid, and very worthless. In view of these facts, I do not think that the relative skill of the planters of Cuba and Louisiana can be estimated by the number of pounds of sugar produced to the working hand. The slaves of Louisiana are civilized and intelligent; they are all natives of our country, and infinitely superior to the *ladinos* or *bozales* of Cuba; also they are not only, as Mr. Valcour Aime says, “as well fed and clothed as labourers are in Europe,” but they are generally far better fed, better clothed, better provided for, and better treated in every respect. He is certainly mistaken in supposing the slaves of Cuba to be fed only on bananas, and equally mis-

taken with reference to their clothing. Of this he would have been aware if he had observed them more attentively, or if he had noticed them wrapped in woollen garments during the prevalence of a norther, as well as on Sunday in their best attire. And if, when at work in the sun or in the boiling-house, the men usually appear with the upper part of the body bare, it is not because they have no clothing, but because they prefer to divest themselves of it.

In conclusion, I repeat the declaration I have made in the introduction to my last report on sugar, that "I am fully conscious of its imperfections." And I am pleased to think that it may be useful, notwithstanding its faults and errors, if these are not allowed to escape attention, and especially if they lead indirectly to investigation and the establishment of truth.

Very respectfully,
Your obedient servant,
RICHARD S. M'CULLOCH.

Mint of the United States,
Philadelphia, July 27th, 1848.

NEW PROCESS OF SUGAR-MAKING.

By this new process of sugar manufacture, three important points are likely to be gained, viz. cheapness, *simplicity* and effectiveness. However, I will explain the mode and let it speak for itself. As the juice runs from the mill, it is strained through inverted conical No. 16 wire gauze strainers, to rid it of impurities as much as possible. I may here remark, that these strainers do not choke. The juice thus strained, passes into the ordinary wooden juice boxes as usual, with this exception—the boxes are now provided with a three-inch pipe, perforated entirely over its under semi-circular surface, with one-eighth inch apertures; this pipe passes the whole length of the box, lying at the bottom and in the centre. Every box is similarly provided with a jet-tube, each of which are connected with a main, and provided with a clarifier valve. The main leads from the top of the heater for the conveyance of waste steam to the boxes, for the purpose of concussion clarification. One simple butterfly-valve turns the waste steam into use for clarification, or into the atmosphere, at the will of the operator. The heater should not be altered beyond a small indicating and self-adjusting cold water-cock, which is as infallible as it is simple. Worms, dividings, discs, separate cold water chambers, &c., have been found troublesome and dangerous, on account of inequalities of temperature, according to the quantity of feed water required.

I do not claim this clarification, as the plan is several years old; but I have made several improvements and simplifications in its arrangements. (*See Planter's Banner, July 6th, 1848, and July 13th.*) The cane-juice being clarified, it is next to be concentrated; for this purpose, I use a double or treble flue-kettle, with a pneumaticus attached. No part of this arrangement is new, except the particular form of kettle, its application and arrangement, which are all I claim. By the use of this apparatus, carbonizing and carmelizing are prevented; superior sugars are produced, and the new form will not use more than one and a half cords of wood to the hoghead. The whole process for a large estate, will not exceed in cost \$2,000. I will now describe it a little more fully. The flue-kettle is similar to a double flue boiler, with this difference, it is open at the top, and thrown out

somewhat so as to represent an inverted semi-ellipse endwise; and when it is charged, the birds-eye view is a rectangular vessel. One negro will attend it, as the labor is reduced to a mere trifle. Through the entire pan, passes one or more of Kneller's air-tubes, supplied by a blowing machine, which are similar to the perforated tubes used for waste steam in concussion clarification. Through those apertures, jets of air pass, which cause quick evaporation and a certain low temperature of boiling, say 180° F. Planters must use great caution and care as regards the alteration of their heaters, for, from the waste steam, concussion clarification, or danger, hindrance, great loss of fuel, &c., will surely occur, if they complicate this affair. In some cases, I join the waste steam-pipe to the eduction pipe near the cylinder, and just allow it to pass through an open top heater. This is the safest and best plan yet introduced, and I hope all will adopt it.

Yours, respectfully,

WM. F. WILKINS.

FRANKLIN, Attakapas, La., Aug. 10th, 1848.

AGRICULTURE OF THE SOUTH AND WEST.

THE COTTON INTERESTS.

COTTON CROPS—MANUFACTURES AT THE SOUTH—CROP 1847-48—PRICES OF COTTON—PROSPECTS OF FOREIGN DEMAND, &c.

GEORGE G. HENRY, Esq., of Mobile, a merchant whose accurate appreciation of statistics, and deductions from them, are highly estimated upon every hand, has published a circular of the 7th July, which is one of the most interesting papers we have seen for a long time. In regard to the extent of the coming crop and prices, Mr. H. remarks:

"The average of the last five years is 2,140,000 bales—last seven, 2,160,000. The Atlantic states are investing in manufactures and rail roads very rapidly, and with the deterioration of their lands, hence the general falling off in their crop. Although their crop was good the past year, it has fallen off largely from those of some years. In Georgia alone, they had reported to the last Legislature thirty-two cotton factories, while in Virginia, North and South Carolina, they are increasing; and their extending lines of rail roads, iron forges, &c. are properly diverting the labor and capital from planting. Sugar in Florida is becoming popular, and there they have practically illustrated that the South is destined to become a great manufacturing country, as they have one cotton factory I know of, in which *slave labor* is entirely and successfully used; and as that labor is, with cotton at even 8½0c. a pound, the cheapest in the world, we can evidently rival any country and will, if the price of cotton does not improve, and we are not cunningly drawn from it. Our Southern legislators ought to consider on such modes as would develop these facts, and encourage the planter to embark in manufactures. The cheapest water-power, the cheapest labor, material cheaper, food cheaper, no interruption by seasons, what is it but a hope of soon obtaining better prices for cotton, that prevents its being rushed into. No country can compete with us. Your negro women and children are quite sufficient for it; their numbers there would increase more rapidly, and when water power is not convenient, steam-power is said by practical men, to be very nearly as cheap, and some argue that it is sometimes preferable.

"In Alabama, investments in cotton factories, iron forges, rail roads, &c., are being made, and emigration from this as well as the Atlantic states has been considerable for several years, and Louisiana, Mississippi, Texas and Arkansas have been receiving it, and hence their production is increasing in proportion to the falling

off of the other divisions of the cotton region. The crop to our west was about as good as is possible to gather. It exceeds, inclusive of Texas, by about 150,000 bales, the largest ever before made there, that of 1842—3, say 1,060,000, which was made when a large quantity of the lands now in sugar in Louisiana were cultivated in cotton.

"With the prospect prevailing and prices getting for cotton in February, March and April, 1847—say 10½a12c.—there can be no question but that all planters strained themselves for as large a crop as they could possibly cultivate and gather, while in the same months of this year prices and prospects were positively disheartening. As the season has been unusually early and favorable, and so far as I have heard is still so, keeping the foregoing in mind, I admit our crop with a continuance of fine seasons, fine fall, and late frost, might reach 2,500,000 bales—being 100,000 bales more than was ever before saved in one year. It must be remembered, however, that favorable as the season so far generally has been, it might so alter, as this shall turn out a short crop.

"I submit the above to my friends, and by reference to estimates made by me at different periods in the last three years, it will be perceived I have been heretofore near enough to the quantity realized for all practical purposes, which were as follows:

December 5, 1845—	Estimate	2,150,000	Crop was	2,034,000
" " 1846	"	1,700,000	" "	1,778,000
" " 1847	"	2,185,000	Will be about	2,285,000
In July, 1846	"	2,000,000	Crop was	1,778,000
" 1847	"	2,150,000		2,285,000

I turn to the prospects of demand and price. Cotton factories are springing up everywhere on the continent of Europe, and the people are laying aside their flax and hemp for common wear, and adopting fabrics of cotton. The supply from India and elsewhere it is also ascertained cannot increase. Indeed those regions import more pounds of cotton goods than they export to Europe, and consumption amongst them will increase while the cost of production for their very inferior article is too great to be largely continued. It has been calculated if France and Germany, with populations of 70,000,000, should consume cotton in proportion to Great Britain and the United States, the increased consumption would be nearly as much as the whole crop of the United States for 1846 was, which is rapidly in progress in some portions, as well as in Spain and Russia. I think the Republic of France will maintain herself, and that she will soon become sufficiently settled for business to pursue a regular course. Her quiet will influence the quiet of the other nations. Tranquillity restored in Europe, with the realizing a fine harvest, of which they have every prospect now; money abundant and cheap; stocks of manufactured goods everywhere low; home trade of Great Britain now good; India and China good; South America and this country good; the Mexican war ended and her trade open; exchanges in favor of cotton; freights low; with the uncertainty of our cotton crop, their only source of supply, and the necessity of manufactures to provide themselves against contingencies, will cause an energetic demand: and should any important check occur to the probable extent of this crop, prices would not only improve, but I should not be surprised to see them run up to extremes."

2.—INTERNAL IMPROVEMENTS IN TEXAS.

We have lately received the Report of the Trinity Convention, for the improvement of the river of that name in Texas, and are pleased with the exhibition of public spirit now manifesting in that state. The Report thus discusses the importance of the Trinity valley:

"In looking over the interior of Texas, we are struck with the extraordinary fertility, and peculiar agricultural advantages of the region of country watered by the Trinity river, its tributaries, and the minor streams adjacent and flowing parallel with it towards the Gulf of Mexico. There is probably no part of the great West which possesses so many local advantages. Situated in that happy latitude which knows neither the extremes of heat or cold—abounding with the purest water—a dry and salubrious atmosphere, and a soil yielding every production, there is no portion of the world which holds out so many inducements to the settler and emigrant, and none which will more amply reward his toil.

"On the lower Trinity, and around the coast of Galveston Bay, is the region of sugar cane and Sea Island cotton. The sugar cane must eventually become the staple production of the country in this region. It yields abundantly, and produces sugar of a superior quality to that made in Louisiana, and is now attracting sugar planters from that rich and flourishing state. Cane of a good quality has been produced in the Trinity valley, as far north as 32°, and it may be produced in a higher latitude, but not as an object to claim the attention of the planter. Its profitable cultivation must be confined within fifty or sixty miles of the Gulf coast. North of the cane region, in the valley of Trinity, the region of corn and cotton begins, and for the production of these great staples, no portion of the world in the same latitude can produce a parallel. The upland, as well as the bottom land, produces cotton abundantly, and the fibre is as fine, and the lint as strong as any in America. There are few of the grain growing states in the North and West that produce more corn to the acre, or of a better quality. North of the corn and cotton portion of the valley, among the beautiful and fertile prairies of the upper Trinity, the wheat country begins. Emigrants from Mexico, Indiana, Ohio, Illinois and Michigan, have tested the wheat-growing qualities of the soil and climate in that portion of our state. The result of their experience is a firm conviction that none of the great wheat-growing states of the Union can surpass the country in the vicinity of the "three forks of the Trinity," in the extent of the production or the quality of the wheat. We feel assured that if the means of transportation were furnished our population in that productive portion of the state, it would not only supply Texas with flour, but would leave a surplus for exportation. For the stock-raiser, the valley of the Trinity offers many inducements. The immense grassy plains of prairie and woodland, the cane-bottoms, with never-fading verdure, and the immense fields of wild rye, green in mid-winter, exhibit that the constant labor and the toil of man are not necessary to rear cattle or stock of any kind, and that they grow and flourish without his care. We may here add that the mineral resources of the country are great. Iron is abundant, and everywhere coal, &c., exist.

MISCELLANEOUS STATISTICS, ETC.

I.—POPULATION, DEBT, LOANS, ETC., UNITED STATES.

From a circular for the European Correspondence of **CANNAN & WHITEHOUSE**, we are permitted to copy the annexed interesting tables, compiled at their request by the Treasury Department, in order that official information might be given to foreigners desirous of investing in **AMERICAN STOCKS**—of the extent of our population, resources and debt.

There is not another country under the sun that can exhibit such resources and so small a debt:

STATEMENT, exhibiting the population of the United States, the Public Debt, the receipts from Loans and Treasury Notes, the receipts, exclusive of Treasury Notes and Loans, and the payments on account of the debt each year, from 1791, to June, 1848, inclusive.

Year.	Population.	Debt.	Receipts from Loans and Treas. Notes.	Revenue exclusive of Loans and Treas. Notes.	Principal and interest of debt paid.
Census of 1791.	4,067,371..	\$75,463,476 52..	5,791,112 86..	4,418,91319..	5,287,949 50
2.	4,305,404..	77,327,924 66..	5,070,806 46..	3,669,960 21..	7,963,665 99
3.	4,343,457..	80,352,684 04..	1,067,701 14..	4,652,923 14..	5,819,605 29
4.	5,481,500..	78,487,404 77..	4,609,196 78..	5,431,904 87..	5,801,578 09
5.	4,619,543..	80,747,587 39..	3,305,268 20..	6,114,834 59..	6,084,411 61
6.	4,757,586..	83,762,172 07..	362,800 00..	8,377,549 65..	5,635,846 44
7.	4,895,629..	82,064,479 33..	70,135 41..	8,688,780 98..	5,792,421 89
8.	5,033,673..	79,228,529 12..	308,574 27..	7,900,495 80..	3,990,294 14
9.	5,171,715..	78,408,669 77..	5,074,646 53..	7,546,813 31..	4,596,876 78
Census of 1800.	5,309,758..	82,976,294 35..	1,602,435 04..	10,848,749 10..	4,576,360 83
1.	5,502,772..	83,028,050 80..	10,125 00..	12,925,200 95..	7,261,707 84
2.	5,695,787..	80,712,632 25..	5,387 36..	14,304,793 25..	539,504 76

Year.	Population.	Debt.	Receipts from Loans and Treas. Notes.	Revenue exclusive of Loans & Treas. Notes.	Principal and interest of debt paid.
Census of 1803.	5,888,801..	\$77,054,686 30..	.....	11,064,097 63..	7,956,150 49
4.	6,081,816..	86,427,120 88..	9,532 64..	11,826,307 38..	8,171,787 45
5.	6,274,830..	82,312,150 50..	128,814 94..	13,560,693 20..	7,369,889 79
6.	6,467,845..	75,723,270 66..	48,897 71..	15,559,931 07..	8,989,884 61
7.	6,660,859..	69,218,398 64..	.....	16,398,019 26..	6,307,720 10
8.	6,853,874..	65,196,317 97..	1,882 16	17,060,661 93..	10,260,245 35
9.	7,046,888..	57,023,192 09..	.....	7,773,473 12..	6,452,554 16
Census of 1810.	7,239,908..	53,173,217 52..	2,759,999 25..	9,384,214 88..	8,008,904 46
11.	7,479,729..	48,005,587 76..	8,309 05..	14,423,529 00..	8,009,304 05
12.	7,719,553..	45,209,737 90..	12,837,900 00..	9,801,133 76..	4,449,822 45
13.	7,959,381..	55,962,827 57..	26,184,435 00..	14,340,409 95..	11,108,123 44
14.	8,199,208..	81,487,846 94..	23,377,911 79..	11,181,625 16..	7,900,843 94
15.	8,439,034..	99,833,660 15..	35,261,320 78..	15,696,916 82..	12,628,924 35
16.	8,678,860..	127,334,933 74..	9,494,436 16..	47,676,985 66..	34,871,082 93
17.	8,918,687..	123,491,965 18..	734,542 59..	33,099,049 74..	25,423,036 12
18.	9,158,513..	103,466,633 83..	8,765 62..	21,585,171 04..	21,296,201 02
19.	9,398,359..	95,529,648 28..	2,291 00..	24,603,374 37..	7,703,926 29
Census of 1820.	9,638,166..	91,015,566 15..	3,040,824 13..	17,840,669 55..	8,628,494 98
1.	9,959,965..	89,987,437 66..	5,000,324 00..	14,573,379 72..	8,267,093 02
2.	10,281,765..	93,546,676 98..	.....	20,232,427 94..	7,844,949 12
3.	10,603,565..	90,875,877 28..	.....	20,540,666 26..	5,530,016 41
4.	10,925,365..	90,239,777 77..	5,000,000 00..	19,381,212 79..	16,538,303 76
5.	11,247,165..	83,788,432 71..	5,000,000 00..	21,840,858 (2..	12,095,244 78
6.	11,568,965..	81,054,059 99..	.....	25,260,434 31..	11,041,032 19
7.	11,890,765..	73,987,357 20..	.....	22,966,363 96..	10,003,668 35
8.	12,212,565..	67,475,043 87..	.....	24,763,629 23..	12,163,438 07
9.	12,534,365..	58,421,413 67..	.....	24,827,627 38..	12,383,867 78
Census of 1830.	12,856,165..	48,565,406 50..	.....	24,844,116 51..	11,355,748 22
1.	13,277,415..	39,193,191 66..	.....	28,526,820 82..	16,174,378 22
2.	13,698,665..	24,322,235 18..	.....	31,665,561 16..	17,840,309 29
3.	14,119,915..	7,001,032 88..	.....	33,948,426 25..	1,543,543 38
4.	14,541,165..	4,760,082 08..	.....	21,791,935 55..	6,176,565 19
5.	14,962,415..	351,289 05..	.....	85,430,187 10..	56,191 28
6.	15,383,665..	291,089 05..	.....	50,826,796 08..	.....
7.	15,804,915..	1,878,223 55..	2,992,989 15..	24,890,864 69..	21,692 91
8.	16,226,185..	4,857,660 46..	12,716,820 86..	26,303,561 74..	5,605,720 27
9.	16,647,415..	11,983,737 53..	3,857,576 21..	30,023,966 68..	11,17,987 42
Census of 1840.	17,068,665..	5,125,077 63..	5,589,547 51..	19,442,846 08..	4,086,613 70
1.	17,560,082..	6,737,398 00..	13,659,317 39..	16,850,160 27..	5,600,689 74
2.	18,051,499..	15,028,486 37..	14,808,735 64..	19,965,009 25..	8,575,539 94
June 30.	18,542,915..	27,748,188 23..	12,551,409 19..	8,231,000 26..	861,526 55
4.	19,034,332..	24,748,188 23..	1,877,847 95..	29,320,707 78..	12,991,902 84
5.	19,525,749..	17,093,794 80..	.....	29,941,833 90..	8,595,049 10
6.	20,017,165..	16,750,926 33..	.....	29,699,967 74..	1,213,823 31
7.	20,506,582..	38,956,623 38..	28,900,765 36..	26,437,403 16..	6,719,282 37
8.	21,006,000..	58,526,349 37..	21,256,700 00..	35,425,750 59..	1,524,9197 21

Present debt, including the amount to be realized on the 1st of May, 1848, of the Loans of 1846, 1847 and 1848, \$65,787,008 92.

TREASURY DEPARTMENT,
Register's Office, August 5, 1848.

DANIEL GRAHAM, Register.

2.—POPULATION OF CANADA.

A Montreal paper says that the result of the census, just completed, of Upper Canada, will give that section of the province a population from 689,000 to 700,000 souls; while, by the census of 842-3, it was only 401,061, giving an increase in five years of nearly 300,000. The last census for Lower Canada was taken in 1844, when the population was 699,806 souls, the increase upon which, during the last four years, is calculated, by reference to preceding terms at which censuses have been taken, to be about 70,000, giving this section of the province a present population of about 770,000. The population of Upper Canada would

* Estimated returns not completed.

thus appear to increase at the rate of about 40,000 per annum, and Lower Canada at that of about 17,000 per annum. Supposing these relative rates of increase to be maintained, the year 1852 will see Upper Canada with a population of 859,000, and Lower Canada with only 840,000; the year 1862 will give the former a population of 1,259,000, and the latter only 1,015,000 souls. The experience of the past, and the present condition of Great Britain and Ireland, will, we think, justify the belief, that the increase of our population by immigration will be greater during the next twelve years than it has ever hitherto been, and that the relative proportions of such increase will be largely in favor of Upper Canada. The probability, then, is that by the year 1862 the western section of the province will contain one million and a half of inhabitants, or one-third more than that of the eastern section.

3.—INTERESTING STATISTICS.

A work has lately been published in England, of which one of our contemporaries says:

"It appears by this work, that France exceeds in most things all the great powers combined; but when she is contrasted with Great Britain she is as far behind the latter as she is in advance of the other continental states. Thus, France exceeds the three powers, Austria, Russia, and Prussia, in the extent of her trade. Great Britain, in her commerce, doubles France. The latter doubles the three powers in the extent of her navy; Great Britain herein more than trebles France. In the extent of its middle class, France exceeds the continent; she has 1,164,000 subjects, enjoying an income above twenty-one pounds sterling. Great Britain has more than two millions and a quarter, enjoying upwards of forty pounds annually. In the quantity of food consumed by its population, France averages double the quantity of wheat, and double the quantity of sugar consumed by the population of the absolutely governed states; in France, 361 lbs. of wheat, and from six to seven and a quarter pounds of sugar are consumed per head. In the United Kingdom, 336 pounds, (and taking Great Britain, only 446 pounds) of wheat and nineteen pounds of sugar, per head, are consumed. During 1847, £68,000,000 were raised in France. The revenue of Russia, Prussia, and Austria, whose subjects are still more severely taxed, in proportion to their ability to pay, is collectively, £48,000,000. The United Kingdom levies only fifty millions of taxes; but, as its income is computed at 550 millions, and that of France at 320 millions of pounds sterling, it is obvious that Great Britain could, without greater pressure, raise double the present revenue of France.

"It is also worthy of remark, that in Russia more than a third of the whole revenue is derived from the brandy farms; which, when the low price at which it is sold, the profits of the brandy farmers, and the produce of illicit distillation, are taken into account, suppose the consumption of a prodigious quantity of ardent spirits. If we turn to Prussia, which is often cited as a specimen of model administration, we find twenty-four pints of distilled liquor the share of each individual; whilst in Ireland, the land of whiskey, the average—nine pints, before Father Mathew's reign—is since only seven: and in the United Kingdom, including London, with its gin palaces, something under six and a half. If a line be drawn through Europe, separating the Western and Constitutional from the absolutely governed states of the centre and east, it will be found that British exports to Holland, Belgium, Spain, Portugal, and France, notwithstanding the restricted tariffs of France and Spain, average three shillings for each individual, whilst for Central and Eastern Europe, only one shilling and eight pence. To the Russian empire, British exports are eight pence and a fraction for each inhabitant.

"These are certainly curious statistics, and we should like amazingly to contrast them relatively with similar ones respecting the economy and commerce of the United States."

4.—UNITED STATES TERRITORY.

Table showing the estimated surface of the Territories of the United States north and west of the regularly organized states of the Union, and the portions of territory thereof situated north and south of the parallel of 36 degrees 30 minutes north latitude.

Territories.	Situated north of parallel 36 deg. 30 min.		Situated south of parallel 36 deg. 30 min.		Total.
	Sq. miles.	Acres.	Sq. miles.	Acres.	
OREGON TERRITORY.—Bounded on the north by the parallel of 49 deg. north latitude, south by the parallel of 42 deg. north latitude, east by the Rocky Mountains, and west by the Pacific Ocean.....	341,463..	218,536,320..	— ..	— ..	341,463.. 218,536,320
TERRITORY NORTH AND WEST OF THE MISSISSIPPI RIVER.—Bounded on the north by 49 deg. north latitude, east by the Mississippi river, south by the state of Iowa and the Platte river, and west by the Rocky Mountains.....	723,248..	462,878,720..	— ..	— ..	723,248.. 462,878,720
WISCONSIN TERRITORY.—East of the Mississippi river, and north of the state of Wisconsin—being the balance remaining of the old Northwest Territory.....	22,336..	14,295,040..	— ..	— ..	22,336.. 14,295,040
INDIAN TERRITORY.—Situated west of the states of Missouri and Arkansas, and south of the Platte or Nebraska river, held and apportioned in part for Indian purposes.....	190,505..	121,923,200..	58,346..	37,341,440..	248,851.. 159,264,640
TERRITORY IN UPPER CALIFORNIA AND NEW MEXICO.—West of the Rio Grande to its source, and of a meridian line thence to the 42d degree north latitude, ceded to the United States by the treaty with Mexico of 1848.....	321,695..	205,884,800..	204,383..	130,805,120..	526,078.. 336,689,920
Add the territory which lies east of the Rio Grande and north of El Paso, up to latitude 42 deg. north, and outside of the limits of Texas, as shown on Disturnell's Map.....	1,599,247	1,023,515,080	262,729	168,146,560	1,861,976 1,191,664,640
	43,537..	27,863,680..	81,396..	52,093,440..	124,933.. 79,957,120
	1,642,784	1,051,378,760	344,125	220,240,000	1,986,909 1,371,631,760

The estimates of the above table were made by the Commissioner of the General Land Office, and furnish the most accurate and authentic information. From them two proportions may be derived, showing the relative amount of territory north and south of the Missouri Compromise line, or parallel of 36 degrees 30 minutes north latitude.

Excluding all the territory claimed by Texas, as in the first division of the table. The territory north of latitude 36 deg. 30 min. : the territory south of 36 deg. 30 min. :: 6.08 : 1.

Including the territory which lies west of the boundary of Texas, as designated on the map of the recent treaty with Mexico, east of the Rio Grande, and north of El Paso. The territory north of latitude 36 deg. 30 min. : territory south of 36 deg. 30 min. :: 4.77 : 1.

Adopting the comparison which shows the least disparity, it appears that, if the line of the Missouri Compromise were extended to the Pacific, there would be more than four times as much of the territory lying beyond the limits of the organized states, upon the northern as upon the southern side of that parallel.

5.—THE ARMY IN MEXICO.

The following table was made up for the New-York Sun, from official data. We published in our July number a table of the soldiers furnished by different states, in the Revolution. A writer in the Philadelphia North American conceives that we gave too great a preponderance to the north, whose soldiers enlisted often, and for very short periods. This does most materially affect the case, and we are obliged to the writer for the correction.

From Non-Slave-holding States.

		Men.
Massachusetts.....	1 Reg.....	930
New-York.....	2 ".....	1,690
New-Jersey.....	1 Bat.....	420
Pennsylvania.....	2 Reg. and 3 Com.....	2,117
Ohio.....	5 " and 3 ".....	5,334
Michigan.....	1 " and 1 ".....	970
Indiana.....	5 ".....	4,329
Illinois.....	6 " and 1 Bat.....	5,971
Wisconsin.....	2 Com.....	146
Iowa.....	3 ".....	229
Total from the free states.....		22,136

From States South of Mason and Dixon's Line.

Maryland & D. C. 11 Com.....	1,274
Virginia.....	1 Reg..... 1,182
North Carolina... 1 Reg.....	895
South Carolina... 1 Reg.....	937
Georgia.....	1 Reg. and 12 Com..... 1,897
Alabama.....	3 Reg. and 13 Com..... 2,981
Mississippi.....	2 Reg. and 1 Bat..... 2,235
Louisiana.....	7 Reg., 4 Bat. and 1 Com..... 7,041
Tennessee.....	5 Reg..... 5,090
Kentucky.....	4 Reg..... 4,694
Missouri.....	69 Com..... 6,441
Arkansas.....	16 Com..... 1,312
Florida.....	4 Com..... 298
Texas.....	99 Com..... 6,955

Total from the south.....\$43,213

6.—MASSACHUSETTS ENTERPRISE.

We copy from the Boston Courier the following interesting statistics. Fifty years since, the Middlesex Canal, costing but half a million, was considered a vast undertaking, and required twenty years for its completion; but since June, 1846, we have commenced and nearly built up from a desert the new city of

Lawrence; constructed new streets and factories at Manchester, Lowell, Riddleford, Blackstone, Lancaster, Worcester, Springfield and Fitchburg; the foundations of a new factory city at West Springfield; made a great aqueduct for Boston; contributed at least seven millions to the war loan; purchased a large part of the Michigan Central, and Wilmington, Mad River, Housatonic, Reading and other railroads out of the state; enlarged and improved all the great routes out of Boston; constructed new lines to Wareham and the Cape, Bridgewater, Milton, Fall River, Blackstone, Milford, Greenfield, Athol, Lawrence, Gloucester, Woburn and Medford, and many cross lines in our own state; and greatly advanced or finished the Northern Passumpsic, Vermont Central, Montreal, Vermont and Massachusetts, Cheshire, Rutland, Sullivan, Ogdensburg and Kennebec railroad—in all nearly 800 miles of new track, opening to us the interior of New Hampshire, Maine, Vermont, Northern New York, Lakes Champlain and Ontario, and the Canadas.

Subjoined is an estimate of the amount our citizens have embarked in a few leading enterprises, principally since the spring of 1846, viz:

In factories and manufacturing cities on the sites enumerated.....	\$13,000,000
Purchase of railroads out of the state.....	8,000,000
Expansion of old lines of railroad.....	6,000,000
Construction of new railroads in Massachusetts.....	7,000,000
Construction of new lines out of the state.....	12,000,000
Boston aqueduct, estimated cost with reservoirs and dead interest.....	4,000,000
Stock taken in United States loan.....	7,000,000

Total.....\$57,000,000

Amount unpaid less than \$7,000,000, July 20, 1848. Estimated dividends to be received by citizens of Massachusetts, June to April, 1849:

From Banks.....	\$2,000,000	Accumulation savings banks.....	\$1,000,000
United States Loan.....	400,000		
Railroads.....	3,000,000	Total.....	\$10,000,000
Factories.....	3,000,000		

The valuation of the state for 1848, if the increase of value in Boston and its vicinity be any criterion, must exceed \$450,000,000, and the annual accumulation can be little short of \$22,000,000.

7.—GRANITEVILLE AND VANCLUSE.

These thriving manufacturing villages in South Carolina have been lately described by Thomas Maxwell Esq., in the Tuscaloosa Monitor.

On the following morning, the 30th, we arrived at the inclined plane at Aikin, on the South Carolina rail-road, where we stopped for the purpose of visiting the Graniteville and Vancluse manufacturing establishments. We soon procured a carriage, and a nice ride of six miles over a hilly country, brought us in sight of the beautiful valley in whose centre lay the charming new built town of Graniteville, owned by the Graniteville manufacturing company.

This company was formed some three or four years ago by gentlemen of South Carolina, desirous of demonstrating the perfect practicability of the south manufacturing her own cottons, and diverting a portion of her labor from agricultural to manufacturing pursuits; and in order to make this labor (which is comparatively new to South Carolina) as attractive as possible, and to guaranty a respectable manufacturing population, it was determined that no pains or labor, or capital, should be spared to make this queen valley to "blossom like the rose," and to construct the dwellings of the operatives so that they should have all the comforts, conveniences and enjoyments of life at their command. Under the auspices of Mr. Gregg, this beautiful and philanthropic design is being carried out with extraordinary skill. When Graniteville burst upon our view from the summit of the hill, its main building of white granite, 350 feet long, with two massive towers ornamented at the top, looking like some magnificent palace just rising out of the green vale below, with an extensive lawn in front, and clean trimmed, gravel walks around, and fountains spouting their crystal waters in the air in fantastic shapes; the neat boarding-houses and cottages for single families, and the handsome little church, all constructed and ornamented in the ancient Gothic style, and each house having its own garden for vegetables and flowers; and the evergreen woods sloping from their garden doors gradually to the summit of the hill where we stood—the whole scene is as though the wand of the enchantress

had called it into existence to challenge our admiration. The extent of the valley below us looked as though it might be 12 to 15 miles in length, though it may be more. On the right at the head of the vale we caught a glimpse of the large pond or small lake from which a canal is cut and conducts the water on the hill slope to the establishment, a mile or so below. Turning to the left we descended the hill, crossed a nice bridge over the canal and entered the enclosure of the principal works. We crossed over to the opposite side, leaving the noble granite building on our right and the lovely green sward on our left, a fountain was throwing up a jet of clear water 15 feet into the air, which was quite refreshing to look upon. We entered the office and presented to Mr. Gregg our letter of introduction. Mr. Gregg was exceedingly polite in showing us everything about the establishment, every part of which was quite interesting to me. The shafting of the whole building was just completed, and Mr. Gregg had it put in motion for our benefit. It ran truly and steadily as possible, not a wobble was to be seen in the whole length. 300 looms were just being put into their places, and the spinning frames, carding machines, &c. &c., were being arranged to cover the whole building. I remarked to Mr. Gregg that I was glad they had not committed the error of only filling a portion of the mill at the commencement. He replied that that was an error he had been determined from the beginning not to commit, as he knew that to fill the mill at the start was the only way to insure success, and that the only condition on which he would have undertaken its control was that capital sufficient for that purpose, should be first subscribed. This had been done. The capital of the company is three hundred thousand dollars, and when all is completed and the full mill set in motion about next October, he says he will have money sufficient left to purchase cotton for a beginning. The mill will contain 300 looms and 9000 spindles, making No. 14 yarns, and sheetings, shirtings, quality to the Appleton goods; a market for which is expected to be found principally in New York. The machinery cost, exclusive of shafting, &c., about \$90,000. The mill and its contents will cost about \$150,000, and the making of the canal, the erection of boarding-houses, cottages, warehouses, shops, &c. &c., including \$10,000 paid for the valley itself, will swallow up most of the other investments. The factory will be propelled by a turbin wheel of one hundred and sixteen horse power, of four feet diameter, with a tube of three feet, and apparently about 20 feet fall. The machinery is all of the most perfect and beautiful kind, and is principally from Taunton, Massachusetts. The whole valley at this point was altogether in the woods four years ago; and to look at it now with all of its improvements tending towards completion, shows with what energy and correct design every part has been prosecuted by the worthy manager. All along the banks of the canal, and facing the factory building, are very handsome houses built with strict uniformity, each having its garden and all other conveniences around it, intended for boarding-houses, and can accommodate besides the family, some ninety boarders with comfortable rooms, &c., and further on, and on the hill slope, nestling among the trees, are numerous cottages, with their peaked roofs, gothic windows and ornamented eaves, each part finished in the old gothic style. These houses are intended for families where the members are sufficiently numerous to fill one house and live alone. Mr. Gregg told us that these cottages thus ornamented, only cost the company \$400 each, and that the ornamented work was only a small portion of that cost; while it was intended to give to the inhabitants a taste for the beautiful, and to encourage among the operatives a pleasant rivalry in making their homes agreeable. For this design the company are certainly deserving of all praise. It is not expected that this establishment will pay a dividend for the first two or three years, so large a portion of the capital is laid out in these improvements for the benefit of the people to be employed, and in constructing the canal, &c.

Being desirous of seeing Vanclose, which is some three miles above, near the head of the valley, and is owned at present by Gen. Jones, a brother-in-law of Mr. Gregg, and was formerly owned between them, I took leave of Graniteville and proceeded through the woods to that secluded spot with its romantic but not inappropriate name. Here again we found our letter of introduction all powerful in opening to us the kind attentions of the worthy proprietor of Vanclose. And though we had but little time to stay, having to return to Aikin before night in order to take the cars to Charleston in the morning, yet we improved that

time in going all over the establishment. It is a small mill completely filled with machinery, having 40 looms in motion, and making more yarns than is made into cloth. These surplus yarns are sold principally in New York. The 40 looms have been making osanaburges, but at present are making choctaw stripes from nankeen cottons, the filling being all white, and the warp half white and half nankeen cotton. This dispenses with the process of dyeing any portion of the warp. The goods makes excellent negro clothing, and is sold at about 7½ to 8 cents in New York and Charleston. The machinery is old and old fashioned, yet under the management of Gen. Jones, who has a most perfectly systematic mind which controls all things well, the establishment is making money. Nothing could exceed the nice precision with which all the operations of the mill are managed. There is not an operation of the mill from the time the cotton is taken from the bale and winnowed until it is made into cotton or yarn, but the cost of each particular process for every day and week is ascertained to the thousandth part of a mill, and regularly entered in a book properly ruled and headed for that purpose, so that every Saturday night or Monday morning you can see at a glance the cost of every yard of cloth and every pound of yarn that was made the previous week. And so perfect is the system, that it is but little labor to keep it correct. The overlooker of each room has a book thus ruled, and he enters every operation under its proper column every day, and the clerk copies from these books the gross amount under each head, at the end of the week, in his book similarly ruled; and on a Saturday night or Monday morning it does not take more than an hour to make the entries, and by this means the operations of the mill can always be seen at any moment in a bird's-eye-view. Gen. Jones bought out the interest of Mr. Gregg last January, valuing the establishment at \$32,000. The looms make about 45 yards per day. One girl generally attends three looms, and they are all paid by the piece. Indeed, throughout the whole establishment, wherever the operation can be paid by the piece it is done, and the proprietor derives great advantage from this arrangement, as the mill is more productive from the same investment under this rule. Besides, superior skill and industry in the operative meet its proper reward.

Gen. Jones was exceedingly kind in showing us every thing about the place, and even entered into particulars to show his profits without the least reserve. In making these choctaw stripes for instance, we found that his cloth the previous week cost him two cents and eight mills per pound to manufacture; his white cotton cost five cents, and his nankeen cost 8 cents. One-fourth of the goods therefore being nankeen, the average cost of his materials is 5 3-4 cents per pound, but say six cents, for even numbers, and say for even numbers that it cost three cents to manufacture it into cloth, instead of 2 cents and 8 mills per pound, thus we find that every pound of his cloth cost him 9 cents, and as his goods are just 8 ounces to the yard, it follows of course that his choctaw stripes cost him 4 1-2 cents per yard, and these are sold at 7 1-2 to 8 cents, which shows a handsome margin for commissions, profit, &c.

**8.—PORTO RICO—EXPORTS FROM PONCE, P. R., TO 31ST AUGUST,
1847 AND 1848.**

	Sugar, lbs.		Molasses, gals.	
	1848.	1847.	1848.	1847.
To America.....	13,444,362	15,256,982	781,497	505,129
Great Britain.....	2,851,834	3,777,037	73,505	425,948
British Provinces.....	1,099,237	1,432,194	34,175	79,435
Different Ports.....	1,548,515	868,639		6,872
Total.....	19,143,948	21,334,852	889,177	1,017,384

9.—REVOLUTIONARY SERVICES OF THE STATES.

A writer in the *Philadelphia North American*, calls our attention to a table we published in July last, which he regards as doing injustice to the Revolutionary services of Southern and Middle States. The table was made up on the authority of Seybert, and only includes the troops of the regular army. We have now, with the greatest pains and labor, made up the following results, which do justice to every section of the Union. They are given on the authority of General Knox, Secretary of War in 1790. (See American State Papers, Class V., vol. I.) The south will have no reason to blush for the results.

	1775	1776	1777	1778	1779	1780	1781	1782	1783
New-Hampshire...	2824	4019	4483	1783	1222	1767	700	744	733
Massachusetts....	16444	20372	12591	13437	7738	7889	5298	4423	4370
Rhode-Island.....	1193	1900	2048	3056	1263	915	464	481	372
Connecticut.....	4507	13227	6563	4010	3544	3689	3921	1732	1790
New-York.....	2075	5344	5332	2190	3756	4838	1178	1198	1169
New-Jersey.....	—	9086	2908	2580	1276	1267	823	660	676
Delaware.....	—	754	1299	349	317	556	89	164	235
Maryland.....	—	3329	7565	3307	2849	2065	2107	1280	974
Virginia.....	3180	6181	11013	7836	7573	6986	6119	2204	629
North Carolina....	2000	4134	1281	1287	4920	6132	3545	1105	697
South Carolina....	4000	6069	2000	3650	4500	9132	3000	3152	139
Georgia.....	1000	2300	2173	3873	837	1272	750	1326	145
Pennsylvania.....	400	10395	9464	3684	3476	3337	1346	1265	1598
Total.....	37623	89651	68720	51052	41584	42826	29346	18006	13476
South of Penn....	10180	22013	24032	20033	20679	26187	15521	9067	2594

1175.—The numbers are those in Continental pay. The Virginians were 6 and 8 months' men, and state troops; the North Carolinians were 3 months, and Georgians 9 months. All others enlisted to 31st Dec. 1775.

1776.—The returns are actual, and approximate and include militia and continentals. 8000 of the men from northern states, averaged but 4 months; 7000 from the Carolinas averaged 6 and 8 months.

1777.—Includes militia and continentals. 1113 New-Hampshire men were for 3 months, 2200 for 2 months; 2775 Massachusetts, 3 months, 2000 2 months; 1500 Rhode Island men, for 6 months; 2000 Connecticut, 2 months; 1500 New-Jersey, 2 months; 2481 Pennsylvania, 5 months, 2000, 3 months; 3420 New-York, 6 months; 1000 Delaware, 2 months; 1535 Maryland, 3 months, 4000 2 months; 1269 Virginia, 5 months, 4000, 2 months; 350 South Carolina, 8 months.

1778.—Includes militia and continentals. 500 New-Hampshire militia were for 2 months; 4500 Massachusetts, 2 months; 1000 New-Jersey, and 2000 Virginia, 2 months; 2000 South Carolina, 3 months; 2000 Georgia, 6 months; part of Massachusetts and Virginia militia were for guarding Convention.

1779.—Includes militia and continentals. 1500 New-York militia, for 3 months; 3000 Virginia, 2, 1000, 6 months; 1000 North Carolina, 8 months; 4500 South Carolina, 9 months.

1780.—Includes militia and continentals. 2000 New-York militia, for 2 months; 1500 Virginia, 12, 3000, 3 months; 3000 North Carolina, average 12 months; 5000 South Carolina, average 4, 1000, 8 months.

1781.—Includes troops and militia. All the Massachusetts and Connecticut men are enlisted for 4 months.

1782.—South Carolina militia, for 4 months.

1783.—All continentals. Army at the north discharged 5th Nov., 1783; at the south, 15th Nov., 1783.

REMARKS ON THE WHOLE.

Supposing the average period of enlistment for all the years to be about the same, north and south, it will be seen that in the first years of the Revolution, when the war was chiefly at the north, the southern states supplied, each year, about one-

third of the whole number of enlistments; as soon, however, as the war extended southward, and became general, the southern states rapidly advance, supplying one-half; and for 1780, 1781, and 1782, *more than one-half* of all the enlistments. Mr. Seybert refers to a paper presented to Congress in 1811, which shows the regular troops raised in the revolution; number servicable in camp, and expense of the army.

	1775	1776	1777	1778	1779	1780	1781	1782	1783
Total men..	27443	46891	34820	32899	27699	21015	13292	14256	13476
Serviceable }									
in camp.. }	15000	25000	26000	1900	18000	19000	10000	11000	12000
Expense.....	\$20,064,666 24,986,538 24,986,538 10,794,625 3,000,000 1,942,462 3,631,745 3,775,063								
Total expenses pecie, including sundry items.....	\$135,103,703.								

10.—STATISTICAL SOCIETIES.

We are most delighted to clip this from the Galveston News, and cheer our friends of Texas on in their labor; our sympathies are all that way.

At Goliad on the 12th day of August, A. D., 1848, the Goliad Statistical Society was organized and the following Committees appointed:

- 1st. on Finance and Accounts.
- 2d. on the Library and Cabinet.
- 3d. on the general state of Religion and Morals.
- 4th. on Literature and Education.
- 5th. on History and Biography.
- 6th. on Animated and Vegetable nature.
- 7th. on Geography and Topography.
- 8th. on Geology and Mineralogy.
- 9th. on Agriculture and Grazing.
- 10th. on Manufactures and Mechanical Arts.
- 11th. on Commerce and Population.
- 12th. on Correspondences.
- 13th. on Enrollments, Revisions and Publications.

The several Committees will have charge of the subjects indicated by their names respectively, in the broadest application of the terms; with instructions to report thereon from time to time, using care to ascertain facts with precision. Communications are respectfully solicited through the several Committees, who may be addressed at Goliad by their respective names.

The South-western portion of the United States with the adjacent country, has already excited much interest throughout the Union, and other parts of the world. But its resources and capabilities are but little known, even to those who reside in this region; and of course, less is known generally by those persons at a distance. Superficial observation—inadequate experiments, and real peculiarities, in this highly interesting country, have all tended to diversify opinions, to distract information, and to suppress knowledge concerning it. Hence the importance of concentration, and certainty; and hence the institution of this Society. Some may consider such an Institution as premature in this country at this time, yet others argue more considerably, in favor of the earliest date as the best, because there is a present and pressing demand for the truth, and the whole truth, so far as may be attainable. The members of this society have no pretensions to enlighten others by their own present knowledge—they look to future acquisitions for themselves, and for others through the organization of the society, and particularly its committees. They hope thus to elicit from others, from time to time, much useful and interesting information, which may then be communicated to the public in a manner entitled to confidence. If liberally aided, the Society may be the instrument of much good, and whatever it may accomplish of real value, will be so much done in the line of utility and improvement.

YIELD OF SACCHARINE LIQUIDS.

THE METHODS EMPLOYED TO ASCERTAIN THE QUANTITY OF SUGAR CONTAINED IN SACCHARINE LIQUIDS.*

The only variety of sugar ever found in healthy cane-juice, is that to which, in consequence of its being entirely crystallisable, that term has been prefixed. We must now inquire into the means usually resorted to, to ascertain its amount in any liquid in which it may be contained.

The first to be mentioned, from its being the one most generally adopted, consists in ascertaining its specific gravity as compared with that of some other with which we may be familiar. Water being the one usually fixed upon for the purpose, we arbitrarily attach to it the specific gravity of 1000.

It has been shown, that the specific gravity of anhydrous sugar is, compared with that of water, as 1600 is to 1000. But as, in the state in which it exists as a vegetable principle, it is found combined with 53 per cent. of basic water, and also, as saccharine solutions always occupy a larger space than that of its two constituents when separate, in consequence of the expansion of the sugar in these cases, and which varies from 1.15 to 1.40 of its original bulk, according to its purity and crystalline structure, it follows that the real density of the refined sugar of commerce must be below that which these figures indicate, being about 1500; according to Biot, 1509.

As the amount of the other constituents of *cane-juice* is relatively small, its density is a test of the quantity of sugar which it contains, sufficiently accurate for all practical purposes.

To ascertain the density of a fluid we must provide ourselves with a pair of scales of good workmanship, and which are carefully adjusted, a set of accurate weights, and a glass bottle of such a capacity, that when filled so as to correspond to a mark or ring scratched upon its neck, it will contain exactly 1000 grains of distilled water at 60° temperature. The bottle, accurately poised by a weight in the opposite scale, is to be filled to the mark with the liquid, which is then to be carefully weighed; the weight is the specific gravity.

Although this is the most accurate method of arriving at the density of a liquid, it is too tedious to be used in the arts, and for all practical purposes the hydrometer may be safely substituted for it. This instrument is, I presume, too well-known to require explanation; but as a few of my readers may not recognise it by that name, I may remind them that it is the one usually employed to ascertain the strength of rum or any other spirit. Two scales have been attached to it, in the one the specific gravity of distilled water being reckoned at 1000, the degrees rise above or fall below that number. The figure, which is on a level with the surface of the liquid in which the instrument is immersed, indicates the specific gravity. The other scale is the one generally in use in sugar manufactories and refineries in Europe; and a hydrometer so adjusted is commonly called Beaumé's saccharometer. On this scale water is marked as 0, or zero, and each of its degrees comprises seven or eight of those on the former; the results obtained by it are, consequently, not so accurate. They are, however, sufficiently so for ordinary purposes; and in one respect this scale possesses great advantages, for owing to a variety of causes, which have been partly explained, the relative proportions of sugar and water, in different solutions, observe a tolerably close connection with the numbers marked upon it, for each degree corresponds with about $\frac{1}{19}$ part of sugar in the solution, so that by multiplying the one into the other, the quantity of sugar is pretty accurately arrived at. For example, let us suppose that the density of the liquid examined is shown by the saccharometer to be 20°, then, $20 \times \frac{1}{19} = 38$, which indicates the number of parts of sugar contained in 100 parts of liquid. The real amount, ascertained by direct experiment, is 37, but the two are wonderfully close.

When the density of the liquid is below 20°— $\frac{1}{18}$ is a better number to use as a multiplier: thus, if cane juice have a density equal to $11^{\circ}-11 \times \frac{1}{18} = 198$, or 19.8-10 is the per centage of sugar which it contains. In a solution of sugar and water of this density, the amount of the former, ascertained by direct experiment, is 20 per cent.

* From Dr. Evans of London.

When saccharine solutions contain any other foreign matter, it is evident the quantity of sugar cannot be arrived at by the same method. In such cases chemists frequently cause the fluid to undergo the vinous fermentation, and then determine accurately the quantities of alcohol and carbonic acid which are produced; but this operation presents too many difficulties to be undertaken by those who are not practically versed in chemical manipulations.

Some years ago the celebrated M. Biot discovered that solutions of sugar, examined by means of polarised light, gave different results, according to the quantity of this substance contained in the solution; and, also, according to the variety of sugar experimented upon. I know not how I shall be able to render what I wish to say upon this subject, intelligible to those who are unacquainted with the phenomena presented by light when it is polarised. The attempt, however, must be made, for the subject is one of considerable interest to the sugar manufacturer, as most unexpected results have been obtained through its means, and we have every reason to expect still further discoveries by its more extended application; moreover, it affords a method of great simplicity, and one which can be easily employed for ascertaining both the amount of sugar contained in the solution, and also its variety.

I am not aware that this method of examining sugar has ever been practised by the refiners or molasses boilers of England, but on the continent its employment has been extensive. To the colonial sugar maker it would be in the highest degree useful, as it would enable him to detect the catalytic changes so often mentioned at the moment they commence, and thus enable him to check them, or still better, to prevent their occurrence, by the exercise of due precaution.

If we take a piece of glass, one of the surfaces of which has been previously blackened by means of smoke or soot, and lay it on a table with its blackened surface downward, and then place near it a candle, in such a position that the light may fall upon it at an angle of $56^{\circ} 45'$, the light thus reflected will be found to possess properties which it had not before. If the image of the candle on the glass be viewed through what is called a Nicholl's prism, that is a rhombic prism of calcareous spar, two images will be observed, each of which will present a different color; if we now rotate the prism, the images will likewise turn, the one round the other, until they arrive in that position in which the one shall be placed directly over the other, when both will present the color of the light from the candle. If we continue the rotation, not only are their colors found to change, but at length one of the images disappears altogether, at a certain determined position of the prism.

If a tube, constructed of any appropriate substance, be filled with a saccharine solution, and closed at both extremities by means of plates of glass, in such a manner that the fluid may be retained within it, and then be interposed between the image and the prism, we shall observe two images in the position in which we before saw but one; and on further rotation we shall obtain a new position, in which the double image will appear. The arc described by the rotation of the prism determines the amount of action of the substance interposed. Instruments constructed upon these principles can be obtained from any of the philosophical instrument makers. A scale is attached to them, adjusted to measure in degrees the rotating powers of saccharine liquids.

The rotating power of water being 0, if any power be observed it must depend upon some substance contained in it; and in pure syrups this must, of course, be sugar. The amount of the power is in direct ratio with the quantity of sugar; in other words, with the density of the syrup and the length of the tube.

The value of this instrument does not consist merely in showing the quantity of sugar contained in a pure syrup, for that could be ascertained by finding out the density of the syrup, but it enables us likewise to discover whether its density be owing to the quantity of sugar contained in it, or to some other substance which possesses a different kind of rotation. The results produced when a solution of cane sugar is thus examined, are seen to be effected by a rotation of the prism from left to right, and from above downwards; but if a solution of glucose or sugar of fruits be substituted for the above, the effects will be produced by a rotation of the prism in the opposite direction, that is from the right towards the left.

These effects, however, are not peculiar to the two varieties of sugar mentioned above, but they are also observed in many other substances; for instance, the effects observed on the examination of a solution of dextrine are, in many respects, similar to those described as occurring when a solution of cane sugar is submitted to the same mode of investigation, so that were these two bodies to be so mixed together as to form a solution of a density of 20° , we should be led into a serious error were we to trust to the results produced by the polariscope as indicative of the amount of sugar that it contains.

When we apply this method of investigation to cane juice, we should remember that there is always present in this fluid a small quantity of dextrine. But when the

canes are healthy and mature, the quantity is so minute that its effects are insignificant, and the results produced may be attributed exclusively to the cane sugar. The amount of the latter substance may thus be very accurately ascertained.

If a syrup obtained from healthy cane-juice, and which is of such a density as to indicate that the amount of cane sugar which it contains is equal to 60 parts in 100, be, on examination by polarised light, found to possess a rotating power equivalent to that which would be produced by half of that quantity only, we should conclude that its powers of rotation have been disturbed by an admixture of some other substance which is possessed of powers of rotation in an opposite direction; and, in all probability, that this substance is glucose, which has been formed during the process of concentration, or previously.

Evaporation is very frequently employed as a means of ascertaining the amount of cane sugar contained in any solution. When the solution consists of pure sugar and water only, and when the evaporation of the latter is performed at the ordinary temperature of the atmosphere, this method may fulfil its purpose tolerably well. But in this case it is unnecessary, as the density of the liquid is a correct indication of what we wish to ascertain. When the evaporation is performed at a high temperature, the result obtained cannot be depended upon, from the risk of converting a part of the cane sugar into glucose.

The method usually resorted to by chemists, for ascertaining the amount of sugar contained in a given solution, is either the following, or one closely resembling it. Presuming that cane-juice is the saccharine fluid to be examined, a weighed quantity of it is filtered, and a portion of very strong alcohol, equal to half its bulk, is added to it; a flocculent precipitate immediately takes place, which is removed by a renewed filtration. The liquid is then placed under the receiver of an air-pump, into which is, at the same time, introduced a vessel containing a quantity of perfectly caustic lime. On the air being exhausted, the water, in consequence of the affinity which its vapour and the lime have for each other, is evaporated, while the alcohol remains. In the course of ten days or a fortnight, the alcohol becomes too strong to retain the sugar in solution, and this substance is, consequently, precipitated. The precipitate is then to be washed in strong alcohol, and, having been carefully dried, it may be weighed, and its amount ascertained.

An equally accurate result may be obtained by boiling and filtering the cane-juice, and then evaporating it in a shallow vessel, over a water-bath, until it has acquired the state of a very thick syrup. A small quantity of spirits of wine is added, and the two liquids are blended together. The mixture is then treated under the air-pump, in the way just described. This experiment does not occupy the length of time required by the former one, and it is equally effective.

Or the cane juice, having been boiled and filtered, may be concentrated in a shallow vessel, over a sand bath, at a temperature not exceeding 150°, or 160°, until it becomes almost dry. It may then be dissolved in boiling alcohol, and, after filtration, the solution is decanted into a bottle, which must be corked and laid aside until the crystals of the sugar are deposited. Although the results obtained by this mode of proceeding are said to be tolerably accurate, and although it is more generally practicable, from its not requiring the employment of an air-pump, I greatly prefer either of the two former, when they can be performed.

EDITOR'S ARM-CHAIR.

Our exchanges for the past month have come to hand, as usual, and we have only space to refer briefly to them.

1. **SILLIMAN'S AMERICAN JOURNAL OF SCIENCE AND ART:** New-Haven. \$5 per annum. This work has reached fifty-six volumes, and is one of the most valuable repositories of scientific knowledge in the world. We notice the publishers offer complete sets for sale, which should be found in every respectable library. Among the papers in the present number are two of especial interest: "On the Indian Archipelago," and on "Gutta Percha."

2. **NEW-ORLEANS MEDICAL JOURNAL** and **CHARLESTON MEDICAL JOURNAL:** Both of these works are now of highly established reputation, and are conducted by men of eminent professional ability. In the New-Orleans Journal there are

some papers upon *yellow fever* which deserve general study, and we shall extract from their statistics. In the Charleston work we note an elaborate article from the pen of Dr. Eli Geddings, one of the most erudite medical philosophers in our country.

3. SOUTHERN LITERARY MESSENGER: Richmond, Va.: \$5 per ann. We have the Sept. No. This is an admirable miscellany, and is the oldest literary work at the south. Its present editor, J. R. Thompson, Esq., exhibits high qualifications for his office. His paper on the languages of Europe is learned and chaste. He also publishes a paper from Lieutenant Maury, on the "Dead Sea Exhibition." By the way, the editor is a little severe on the "Brothers in Unity," for omitting all reference to the *Southern Quarterly*, or himself. We, too, might have complained, had not our "brother" of the *Messenger* excluded us from all the laurels of the southern periodical press, with which we have been connected about five years. Perchance, however, he thinks us "nothing if not *statistical*," and he may be right in that.

4. BANKER'S MAGAZINE: Baltimore: J. Smith Homans. \$3 per annum. The September number contains the usual variety of information in regard to banks, currency, finances, &c. It is now well established, and deserves the support of all the bankers and merchants of the Union.

5. WESTERN JOURNAL: August and September: St. Louis. \$3 per annum. We have frequently referred to this excellent monthly, and have extracted in our present number from its pages. A paper on "Hemp" attracts our attention, which we would like to republish.

We are pleased to refer, in the same connection, to the *Mining Journal*, published in New-York; the admirable *Railroad Journal*, published in Philadelphia by our friend, Mr. Minor, who deserves every kind of success; *Niles's Register*, Philadelphia, and last though not least, to the *Literary Weekly Gazette*, published in Athens, Geo., by Mr. Richards, a gentleman well-known to the southern press. We have been delighted with his enterprize, and have watched its progress from the very beginning.

SOPHISMS OF THE PROTECTIVE POLICY: Translated from the French, by Mrs. D. J. McCord, of South Carolina, with an introduction, by Dr. Francis Liebert: Charleston: John Russel. Of this work Mr. Calhoun has spoken in the highest terms. We have read parts of it with the liveliest interest. Nothing can be more lucid and convincing. Our chief regret is, that we receive the work too late for an elaborate notice sooner than our next number.

"ANTI-ALARMIST AND CHARLESTON, in reply to the Objections to Railroads, by Anti-Debt." This pamphlet was published in Charleston, and is a most admirable exposition in regard to railroad enterprises. We shall notice and review it elaborately, if possible, in our next number. We have heard it attributed to the pen of our friend, Col. James Gadsden, of Charleston.

The Report of Hon. T. Butler King, on "Steam Communication with China," will be noticed in our next.

Our friend, Dr. Albert W. Ely's paper is at hand, and will soon appear.

☞ And now, reader, we have been compelled to publish a double number, as you see. The loss has been ours, and not yours. Remember us, we pray you, for our funds are very low, and ought, in all conscience, to be replenished forthwith. We appeal again to our subscribers to be prompt in this vital matter.

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The Lectures in this College, lately concluded by the graduation of a large class, will commence on the 20th of November, in the capacious edifice on Common-street, which the builders are now rapidly finishing. Having adopted and maintained a high standard of medical education, the professors, from their connection with the City Hospital, enjoy superior advantages for practical instruction in clinical Medicine, Surgery, and Midwifery. There is a fine amphitheatre in the Charity Hospital, for surgical operations and lectures. Opportunities for the pursuit of practical anatomy are unequalled—subjects being supplied gratuitously in any number. For further information, persons will please address the Dean for the printed circulars and catalogue. For the correction of false statements it is proper to mention that the expenses of boarding, &c., in this city are much reduced, that the epidemic yellow fever never prevails after the first week in November, and that hereafter contagious diseases will not be promiscuously admitted into the medical wards of the Hospital.

JAMES JONES, M. D., Dean.

LAW DEPARTMENT:

The Lectures and instruction in this department will commence on the second Monday of November next, and continue until the 1st of May.

Those by Professor BULLARD will embrace History of Roman Law, Analysis of the general principles of Roman Law, on the approved method of the German School; Jurisprudence of Louisiana, compared with Roman Law, and French and Spanish Codes; outline of Land Titles in Louisiana, derived from Spain, France, and United States.

Those by Professor McCALLEN will embrace Admiralty and Maritime Law, International Law, including Law of Prize, rights of Peace and War, Treaties, etc.; Jurisdiction United States Courts, Supreme, Circuit, District, Instance, and Prize Courts, &c.

Those by Professor HUNT will embrace Commercial Law, as it relates to mercantile persons, property, contracts, remedies, partnerships, corporations, bills of exchange, freight average, insurance sale, guaranties, lien, &c., &c.; Criminal Law and Practice; Law of Evidence.

Those by Professor MONROE will embrace the Common Law and Equity, Jurisprudence, and Practice and Pleadings in Civil Cases; Constitutional Law.

Chief Justice EUSTIS will deliver a series of Lectures on the Rights of Persons and the Conflict of Laws; and CHRISTIAN ROSELUS, Esq., will assist as Adjunct-Professor, in the department of Civil Law.

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The various other chairs of the Literary and Scientific departments of the University will be organized, it is hoped, at an early day.

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THE COMMERCIAL REVIEW

OF THE
SOUTH AND WEST.

ESTABLISHED JANUARY 1, 1846.

J. D. B. DE BOW, EDITOR AND PUBLISHER.

Volume VI.

DECEMBER, 1848.

No. 6.

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THE COMMERCIAL REVIEW.

Volume VI.

DECEMBER, 1848.

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NO. I.—SUGAR MANUFACTURE.

OBJECT OF EVAPORATION—METHODS OF EVAPORATION—FILTRATION THROUGH ANIMAL CHARCOAL—CONCENTRATION OF SYRUP—VACUUM PAN—ALKALINE, ACID, SALINE, VISCOUS AND ALBUMINOUS SYRUPS—CRYSTALLIZATION—POTTING—CLAYING—LIQUORING—CONCENTRATING SYRUP—MOLASSES—BOILING HOUSES—QUANTITY OF SUGAR IN CANES—LOSS IN EXTRACTION, ETC., ETC.*

HAVING separated as completely as possible from the cane-juice those substances which are liable to produce mischief, both by preventing the successful performance of the succeeding operations, and by the injurious effects which their presence produces on the sugar, we next proceed to evaporate a large proportion of its water, and reduce it to the state of a syrup.

At the present time the liquor, on leaving the clarifier, passes at once to the coppers, where renewed defecation, evaporation, and concentration of the syrup into sugar, are carried on simultaneously.

These coppers are segments of hollow spheres; they are five in number; are all arranged on the same plane, and are acted upon by one fire.

When this plan was originally introduced into the West Indies is unknown, but it appears to have been in use in India from the earliest period.

That three operations so very important as defecation, evaporation, and concentration, should be performed at the same time and in the same vessels, without serious injury arising in one or other of the processes, a little reflection would show to be impossible, and experience has proved that it is so.

* Continued from October and November Nos., and *Concluded*. For Dr. Evans' method of ascertaining the quantity of sugar contained in saccharine liquids, see November No. Review, page 375, Vol. VI.; and for a description of the Saccharometer, etc., etc., see the elegant article of our friend, J. P. Benjamin, in Vol. V. For other information upon sugar, consult the six volumes of Commercial Review, now published—the most extensive repository of such information in this or any other country. They can be had at our office.—Ed.

That this plan has been continued up to the present time is not the fault of the planter. Until recently the introduction of fine sugars into this country was virtually prohibited by the extraordinary differential duties attached to them. The planter, consequently, sought to obtain, by the cheapest means in his power, the largest possible quantity of an article best suited to give him a money return for his labors. Thus the sugar manufacture in the colonies was restricted to the obtaining from cane-juice a semi-crystallized concrete, which we recognise in Muscovado sugar.

Under such circumstances, it is not surprising to find old authors rapturously extolling a plan which, whatever might be its imperfections as a means of obtaining a thoroughly good product, allowed, as was then imagined, the planter to produce such a one at least as his position exclusively permitted, with economy, with little trouble, and without the exercise of much manufacturing skill.

A knowledge of what really occurs when cane-juice and syrups are evaporated and concentrated in this manner, might lead to a doubt whether economy either in time, labor, fuel, or money, is effected thereby; indeed it is now generally acknowledged, that not only is this plan unfitted for the manufacture of a superior quality of sugar, but that the objects which alone admitted of its defence are attained far less completely than its admirers imagined. For the form of the pans, their globular bottoms, and the distances which exist between them, cause them to present a comparatively small effectively heating surface; whereas the mass of masonry, in the shape of copper walls, arches, &c., instead of being kept as cool as possible, offer even a larger amount of surface for the absorption of the caloric than the vessels which it is intended to heat.

That this system can be continued, except at a great sacrifice, cannot be disputed; we should therefore attempt by every means in our power to remedy its defects. The object that I have principally had in view throughout these pages has been to obtain improved results, by inculcating a knowledge of correct principles, rather than by the recommendation of new and expensive machinery. Pursuing the same design, we will now extend our inquiries as to the best way that amelioration of this part of the process can be attained at the smallest cost, and with the least disturbance of the present plan.

The manufacture of sugar comprises three operations, namely, defecation, evaporation, and concentration, which are so distinct from each other, both in the mode required to perform them, and the objects to be attained by them, that their separation is indispensable.

Evaporation has for its object the concentration of cane-juice to the consistency of a syrup of that degree of density best suited to the process which it has afterwards to undergo. Thus, if the syrup is to be filtered through animal charcoal previously to its concentration into sugar, the density which is best suited for this purpose is 27° or 28° Beaumé; but if this operation is not to be performed, the evaporation may be prolonged until the syrup has acquired a density of 30° or 32°.

Evaporation of cane-juice is best performed by ebullition at the ordinary atmospheric pressure. That degree of heat, at this stage, during which the sugar is largely diluted, when judiciously applied, so that the syrup may not be exposed to it longer than is absolutely necessary, is always beneficial, and often essentially necessary; for, otherwise, a larger portion of the nitrogenized matters, which have not been entirely removed, would be retained, and the crystallization of the sugar would be less complete.

The means required to effect these purposes, it is obvious, are of very great simplicity, and may be attained as follows:—

1st. By retaining the present plant, the teache being taken away, and the fire made under the second copper. In this case the four coppers constitute the evaporating apparatus, and are to be employed for that purpose exclusively. The cane-juice, after defecation, is passed into the one most distant from the fire, and successively into the others, where it is to be skimmed and ladled, as at present, until it shall have attained, on arrival at the last, the density required, when it must be skipped either into charcoal filters, into a cistern placed for its reception, or into the concentrating vessel, as will be described presently.

This arrangement would be a very great improvement upon the present plan, and it may be obtained without much alteration in the plant, or without any outlay of money beyond that which is now required for keeping the copper walls in order; nevertheless it is in many respects still very imperfect. 1st. It requires the use of megass as fuel, in consequence of the distance which the flame has to pass over. 2d. It requires a larger quantity of fuel than is necessary to produce the amount of evaporation demanded. And 3d. It requires the labor of four men to ladle the liquor from copper to copper.

These, I think, are reasons sufficiently satisfactory for advising the introduction of some other system, whereby those expenses would, in a great measure, be spared. I am, however, too well aware of the unhappy condition of the colonies to expect that, for the present at least, any improvement which requires even a small outlay of money to effect, will be generally adopted, if the same results, though at a greater cost, can be obtained by means which every estate now possesses.

2d. The next alteration in the plant which I propose, consists in substituting for the present coppers a large flat-bottomed vessel, made of cast-iron or copper, of an oblong shape, with the angles rounded off, to protect them from the action of the fire. It should be divided in the centre into two equal compartments, by a metal plate containing a valve, by means of which the liquor may be passed from one into the other when required.

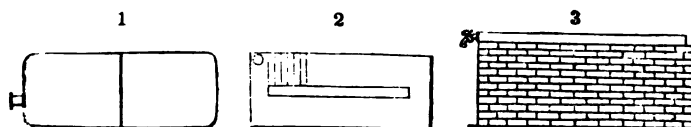
It must be hung in such a manner, that the flame may come in contact with every part of the bottom, but be prevented from touching the sides.

The dimensions of the vessel will depend upon the work to be performed by it. On an estate having three clarifiers of 300 gallon

each of which can be filled by the mill, and the juice boiled and filtered in three quarters of an hour, the size required for the evaporating pan would be fourteen feet in length, seven feet in width, and eighteen inches in depth. Two such would be necessary.

When set, the pan should be surrounded by a sloping border of lead, in the same way as the present coppers, to admit of the rise of the liquor during ebullition. The separation between the compartments should be of the same elevation as the pan itself, so that the contents of one side may readily overflow into the other. The skimmings are to be taken away when necessary, but as no ladling is required, one man would be sufficient to perform all the duties required by it. A large cock should be attached to one extremity, by which the syrup may be drawn off when sufficiently concentrated.

The vessel should never be completely emptied, except at the close of the day. Generally, the quantity taken away each time will be equal to the contents of the clarifier, less the water lost by evaporation. To effect this when the juice is at 10° Beaume, the rate of evaporation must be about 200 gallons, and the quantity of syrup obtained in consequence, 100 gallons at 27° every three quarters of an hour.

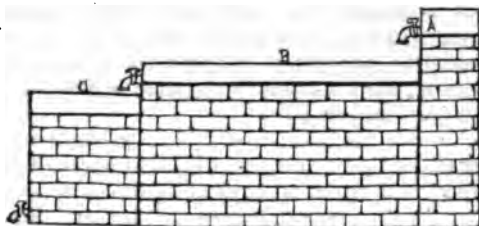


The above diagram will enable us to understand the pan more accurately than we could do, probably, by description only. 1. The outline of the pan. 2. The furnace on which it is hung. 3. The pan set in mason work.

3d. The evaporating vessels may be, if it should be thought preferable, arranged in another manner. Should this plan be adopted, the apparatus will consist of two flat-bottomed vessels, either of iron or copper, (in the latter case the bottom should be made to curve inwards.) In shape they should approach a square, the angles being rounded off; and, instead of being hung upon the same plane, the upper edge of the lower one should be on the same elevation as the bottom of the one above. They should be so set, that the fire applied to the lower one will serve to heat the upper one also.

Their size should correspond with the work to be performed by them; and, supposing it to be the same as that given in the preceding plan, the upper vessel would require to be, at least, twelve feet long, eight feet wide, and eighteen inches deep; the lower one, nine feet long, eight feet wide, and eighteen inches deep.

The clarified cane-juice is to be received by the upper vessel, and after undergoing a certain degree of evaporation, is to be transmitted to the lower one by means of a cock.



A. The cock admitting the defecated cane juice into the upper evaporator, B. The lower evaporator, with its discharging cock.

Gay Lussac has remarked, that liquids are more easily converted into vapour, when in contact with uneven and angular surfaces, than when these are smooth and polished. Evaporation may be greatly promoted, also, by increasing the extent of the heating surface of the vessel in which it is carried on.

These facts have been taken advantage of in the arts, and evaporating vessels are now frequently made with their bottoms corrugated, which, by increasing the heating surface, augments likewise their evaporating powers. A patent was taken out two or three years ago for producing a similar effect, by extending from the outside of the bottoms of pans, a great number of metallic studs or projections about two and a-half or three inches long.

The evaporating properties of every vessel may be greatly increased by these contrivances. I therefore think that more attention should be bestowed upon them by planters in general than what has hitherto been done.

It has been found that the material of which the evaporating vessel is composed, influences the temperature at which ebullition takes place. When a glass vessel is coated inside with a thin film of shellac, the temperature of water boiling within it has been observed at 220° , or even higher. This teaches us the necessity of keeping the bottoms of the evaporating vessels clean, and free from those deposits so frequently found adhering to the inside of the coppers.

Steam has within the last few years been extensively employed on the continent as the heating medium for evaporating the defecated juice of the beet-root; indeed, it is now the one almost exclusively employed in those countries, in all the operations of this manufacture in which the action of heat is required.

The kinds of apparatus which have been constructed for the employment of steam, as the agent for procuring heat, have been so various as not even to admit of their enumeration. They may, however, be divided into those which consist of shallow vessels with double bottoms, into the space between which the steam is admitted, and into others which are deeper, and in which a copper steam pipe is introduced in the form of a coil or spiral.

The evaporation which takes place in these vessels is often extremely rapid, and there can be no doubt, that in other respects

they present a marked superiority over those vessels which are heated by means of the direct action of fire. These advantages, as far as regards the process of evaporation of cane-juice from its ordinary density, until it assumes the state of a syrup at 27° or 28° Beaumé, we must inquire into.

Whatever be the medium employed to produce evaporation by ebullition at the ordinary pressure of the atmosphere, it is evident, that the liquid acted upon, must in every case rise to the temperature necessary for the performance of this action. Steam offers no exception to the rule; but it enables us to effect ebullition in liquids with great rapidity, and, at the same time, with less liability to burning than can be performed over the naked fire; because it admits of the heating surface being increased to almost any extent, and of its being at the same time immersed in the fluid to be heated.

Steam is very manageable, and admits of the *amount* of caloric applied to the liquids being regulated at pleasure, so that in the case before us the heat may be instantly withdrawn, and the evaporating vessel be converted at once into a simple cistern, when we require to empty it of the syrup.

These advantages, offered by the use of steam, as a means of effecting the evaporation of cane-juice, are certainly very great; and, on a large estate, requiring a new plant for the boiling-house, its introduction would, no doubt, in many respects be very beneficial. But whether it can be introduced with real advantage into a boiling-house already erected, in which the plant is in perfect order, and where the estate does not produce annually 400 tons of sugar, is less certain.

In the first place the removal of the present plant, and the substitution of another upon the above principle, would be attended with a very considerable outlay of capital; in the second, such a change is not absolutely demanded, for the results obtained in the processes of defecation and evaporation over the naked fire, may, with an ordinary degree of care and watchfulness, be equally satisfactory; and lastly, the only decided advantage possessed by this method, is the entire removal of the heat from the pan when required, without the trouble and annoyance of damping or drawing the fire. A very great advantage, certainly; but will it compensate the capital invested for its attainment?

Although the employment of steam possesses all the above advantages, it is far from being so economical a method of producing evaporation as the open fire. How well soever an apparatus on this principle may be constructed, the loss of caloric will be considerable, and the consumption of fuel will be proportionately great. This is a serious drawback to the recommendation of steam, for, coupled with the additional expense of the plan, it will go far to neutralize its advantages. On those estates, however, where the vacuum pan is used for concentrating the syrups, that is, where steam is already in use, its extension to the other processes of the manufacture might be effected at so small an increase of expense as to render it profitable.

Whatever be the means employed to evaporate the defecated liquor, expedition is urgently demanded, for the shorter the time that it is subjected to the boiling temperature, the less will be the risk of any of the catalytic decompositions being induced.

Cleanliness in this, as in all the processes, should be strictly observed.

The scum, as it arises in thin, insulated films, should be removed and thrown back into the clarifier, as the syrup which it retains is too pure to be converted with profit into rum.

Having, by the foregoing operations, succeeded in obtaining a pure and well defecated syrup of the required density, the colonial sugar-maker has arrived at that stage of his operations which corresponds with the first steps taken by the refiner in Europe; and from this point these two branches of industry ought to be considered identical. The former, however, is in a position of much less difficulty and embarrassment than the latter, for he has the power of exercising a discretionary opinion as to the extent to which the succeeding operations may be carried on, or whether it be to his interest to adopt them or not. He has obtained, if his efforts have been successful, a bright transparent syrup of the color of pale sherry, capable of granulating with facility on due concentration, and of forming a fine canary-colored Muscovado sugar. It is simply a matter of economy, whether this is to be the object sought to be attained, or whether, by the application of additional care, pains, and labor, his profits may not be more than proportionately increased by the superiority of the result obtained.

In the first case, he will at once proceed to the operation shortly to be described, that of concentration; in the second, he will follow the example of the refiner one step at least in his business, namely, in the filtration of the syrup through a bed of animal charcoal.

The application of the fact, that *vegetable* charcoal possesses the property of discharging color from syrups, to the purposes of art, was one of the greatest modifications that had taken place in the refining of sugars up to the period of its introduction in 1805.

In the year 1811, it was discovered that *animal* charcoal possessed the same power in a considerably greater degree, while its employment was not attended with many serious evils, which were found to accompany that of the former.

M. Derosne was, I believe, the first who caused the introduction of animal charcoal into the refineries of France. Some short time afterwards it was introduced into those of this country.

The mode of employing this substance at first was as follows:—The Muscovado sugar was dissolved in boiling water, in such proportions as to form a solution of about 30° Beaumé; the animal charcoal, in the state of a very fine powder, was then added, and the whole was mixed together by means of an oar. A quantity of bullock's blood was afterwards thrown in, the stirring being continued. The mixture was allowed to boil for a second or two, and then filtered through a blanket and basket, until the introduction of the bag filters, when the latter were universally substituted for that rude and imperfect method.

Some years ago M. Dumont, being struck with the great augmentation of power which animal charcoal presents when employed as a filtering agent, and when syrups were allowed to percolate through layers or beds of it, after many efforts, succeeded in constructing filters on this principle, which have since been in general use, and which bear his name.

However employed, the action of animal charcoal upon impure syrup is in the highest degree extraordinary, and has never as yet been satisfactorily explained.

The object sought on the first introduction of this substance into the refineries in France was that of discharging color merely; but on being used for this purpose in the factories of beet-root sugar, it was quickly perceived that it possessed other properties equally important, and not less beneficial. Syrups treated by it were rendered crystallizable, which before, from their viscid character, had no disposition to granulate. Others that were slightly acid became neutral; and those containing an excess of lime had this excess removed.

It was afterwards discovered that many of the bitter and aromatic principles of vegetables were destroyed, when infusions prepared from those substances were filtered through beds of animal charcoal. Latterly the experiments of Dr. Garrod have shown that animal charcoal possesses still more wonderful properties—that it is, in fact, an antidote to some of the most virulent poisons of the animal and vegetable kingdom, as prussic acid, strychnine, aconitine, &c. That gentleman has shown that when solutions of any of the alcaloids are mixed with washed, or purified animal charcoal, in the proportions of half a grain of the former to half an ounce of the latter, the filtered liquid possesses no poisonous property whatever. Vegetable charcoal produced very little, and lamp-black no effect whatever, in this respect.

The manner in which the animal charcoal acts in the production of these results is quite incomprehensible. Its chemical characteristics seem to be unchanged, nothing appears to have been added to it in chemical combination, nor does anything seem to have been abstracted, except those powers themselves, which are, however, restored, either by fermentation or by re-burning.

If we look to its chemical composition for a solution of the effects produced, we receive no information, for it consists of charcoal 10; phosphate of lime and carbonate of lime, 88; silica and iron, in the state of an oxide, 2.

Many other bodies, as chlorine, sulphurous acid, alumina, &c., have the power of destroying certain organic coloring matters; but none of them can discharge that color from syrup which is induced by its continued exposure to a high temperature: animal charcoal being the only agent at present known possessing this property.

The beneficial results obtained by the action of animal charcoal on the syrup obtained from cane-juice, are—1st. Decoloration, which extends both to the sugar and molasses. 2d. Abstraction of any excess of lime which it may contain. 3d. The neutralization of any free acid. 4th. The removal of nitrogenized matters. 5th.

The amelioration of that viscid condition which inspissated cane-juice frequently presents. 6th. The promotion of granulation.

It follows, therefore, that the employment of animal charcoal enables us to obtain a larger amount of sugar, and a great improvement in its quality. The molasses, also in consequence of the lightness of their color and their freeness from viscosity, are, when the syrup from which they were produced has been thus treated, fitted to yield in their turn a very superior quality of Muscovado sugar.

It is, however, on the syrups obtained from the beet-root that the action of animal charcoal is the most decided, and the benefits resulting from its use most clearly evinced. Indeed, it may be doubted whether, deprived of the assistance rendered by this substance, that branch of industry could be pursued with profit.

There has been no such urgent necessity for its employment in the colonial boiling-houses, which, coupled with the expense attendant upon its introduction, has caused its perhaps unmerited neglect there. But if it can be employed with economy and great benefit in the refineries in Europe, is it surely worth inquiry how far the same results may be obtained in the colonies.

Were animal charcoal extensively employed throughout the West Indies, a new branch of industry must necessarily accompany it; namely, that of its manufacture and re-burning. There would be no difficulties met with in this respect.

There are certain varieties of charcoal, which, so far as regards the decoloration of syrups, possess powers scarcely inferior to bone black. Of these, the one which results from the destructive distillation of bituminous shale is pre-eminent. I have made many experiments with this variety of charcoal on syrups of different kinds, and have invariably succeeded in improving their color to a very considerable degree; but it is said not to possess to an equal extent the property of separating the lime and albuminous principles. Such, it is probable, is the case, and the benefit derived from its employment in the manufacture of beet-root sugar would therefore be limited; but as the syrups from well-defecated cane-juice contain those substances in very minute quantities, these objections may not be equally applicable to them. The properties of this substance are improved by re-burning, and its price would not exceed the fourth of that of animal charcoal.

The asphalt of Trinidad, submitted to destructive distillation, affords an excellent charcoal, which there is every reason to believe possesses considerable powers in discharging color from syrup.

Although vegetable charcoal in its ordinary state is of little value as an agent for bleaching saccharine liquids, its powers in this respect may be considerably augmented by proper management.

Let 30 lbs. of it, reduced to a fine powder, and then washed carefully in water, slightly acidulated with muriatic acid, and afterwards with pure water, be mixed with 70 lbs. of clay, in the form of a paste, and the whole be set by to dry; then let it be broken into small pieces, and calcined in a close iron vessel at a white heat for two hours. On its withdrawal it must be received in covered iron

boxes out of the contact of the air, or instantly cooled with aspersions of cold water, and reduced into a coarse powder. This forms an excellent substitute for animal charcoal, as it possesses considerable discolorating powers.

There is also another preparation which answers this purpose tolerably well. Take 100 parts of clay, prepared as above, 40 parts of tar, and 500 parts of common coal bruised very small; blend the whole into an uniform mass, dry in the sun, break it into pieces, and calcine in a retort.

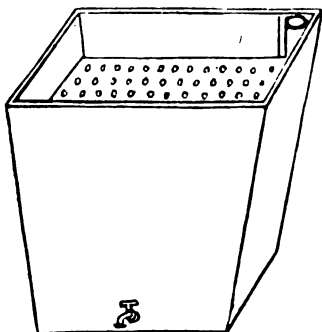
Both the above preparations can be employed in the way of filtration only.

Their powers, when enervated or destroyed, may be renewed by reburning.

The advantages derived from the use of animal charcoal in boiling-houses of the West Indies, were they confined to the discharging of the colour from the syrups merely, would be so considerable, from the increased value of the products, that it is surprising its introduction has been on so limited a scale. Its great price as an article of commerce, and the labour and trouble entailed by its repeated calcinations, have operated, it must be admitted, as powerful reasons against its more general employment.

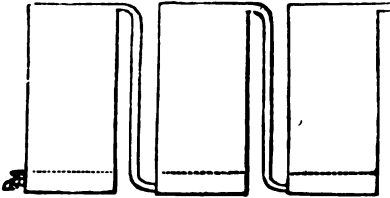
If, after due evaporation, it is decided to pass the syrup through charcoal, one of the following plans may be pursued:

Dumont's filter consists of a quadrangular pyramidal vessel, made of wood, the base being uppermost. It has a double bottom, the upper one being composed of a piece of basket-work, or a perforated metal plate. In the space between the two is inserted a cock, and a metal tube which rises to the same elevation as the vessel itself, also communicates with this part of the apparatus. Upon the perforated false bottom a piece of flannel is spread, on which the animal charcoal, reduced to the state of a coarse powder, or in grains, and moistened with a little water, is carefully and evenly spread, until about two-thirds of the vessel is filled with it. Over the charcoal is placed a perforated cover or a piece of basket-work, and the filter is fit for use.



The hot syrup is now poured in, and allowed to percolate slowly through; the air and water being forced onward by the pressure, escape through the tube. On arriving within the space between the true and false bottom, the cock is turned, and the filtered syrup escapes. These vessels are about three feet wide at the top, two feet at the bottom, and about three and a half feet deep. Four such would be required to be in use in a boiling-house, making three hogsheads of sugar per diem. They may be employed for three or four days successively: after that period the charcoal requires to be revived.

Peyron's filters.—These filters are composed of a series of cylindrical copper vessels, each having a double bottom, as those of Dumont, and being hermetically closed at the top. They are closely packed with animal charcoal, and into the upper part of the first vessel is introduced a pipe for the admission of the syrup, which is made to descend from a sufficient height, or which is forced in by means of a pump in such a manner that, from the pressure employed, it passes rapidly through the charcoal, and is received by the space between the two bottoms. Here it enters another pipe, which conveys it to the upper part of the second filter placed close by. Thus it continues through the whole series, until it is at last drawn off by a cock placed for the purpose in the last vessel.



Each of the cylinders is six feet high, and three feet in diameter. Three of them would be required in a boiling-house making three hogsheads a day. They act well for about five or six days. The charcoal is never removed from them; but when its powers acquire to be restored, boiling water

is introduced for the purpose of washing away as much as possible the syrup remaining in the interstices. The sweet liquid which comes away is thrown into the evaporating vessels, while the filters are put into some warm place that fermentation may ensue. It is stated, that this fermentation is completely terminated after twenty-four or thirty-six hours. In this way, the organic matters which had neutralized the decolorating powers of the charcoal are destroyed; and to restore its properties nothing now is required but an effective washing. This is best performed by the injection of high pressure steam for half an hour; when steam is not used in the boiling-house, hot water must be passed through in a continued stream until it comes away clear and limpid.

These filters have answered their purpose very well both on the continent and in London; but strange to say, they exert little action upon syrups obtained from the beet-root. They appear, however, to be well suited for the colonies.

The simplest, and certainly not the worst kind of charcoal filter, is one that can be made in a moment on any estate. Take a clean rum puncheon, and at the distance of two or three inches from the bottom, make a support sufficient to retain a piece of basket-work, corresponding in size to that part of the cask. Into the space between this and the bottom affix a cock. Fill the cask up to about two-thirds of its height with charcoal, carefully, so as to avoid all inequalities of surface, and cover it with another and similar piece of basket-work. The filter is now prepared. Introduce the hot syrup gradually and cautiously until the puncheon is entirely full; let it remain in contact for two hours, and then turn the cock. The first portion of syrup that comes away will contain minute

particles of charcoal; it should therefore be returned to the evaporating vessels.

Four puncheons, so arranged, would be required in an ordinary boiling-house. The other filtering substances described above answer very well when used in this way.

By the performance of the before-mentioned operations on the cane-juice, a syrup will have been produced. This syrup may or may not have been filtered through animal charcoal. In the first case its density will be 27° or 28° Beaumé, being the degree best suited for that purpose; the relative amount of its constituents will be 50 parts of sugar and 50 parts of water in 100, and the temperature of its boiling point will be 219° or 220° Fahr. In the second case the density of the syrup will be somewhat greater, and it may conveniently be stated at 32° Beaumé; then the amounts of its sugar and water will be as 60 of the former to 40 of the latter in 100 parts, and its boiling point will be 224° .

Syrups having these degrees of density may be exposed for a short time to a temperature equal to the one above, without the occurrence of much injury; but if the period of its exposure be protracted, or if its temperature be augmented (a necessary consequence of its increasing density by a continued ebullition), changes in the composition of the sugar will, as formerly shown, inevitably ensue.

These changes will be produced even in the purest syrups when thus treated, but they take place more rapidly, and exist to a greater extent when the syrup holds in solution those organic and saline substances which are found in cane-juice.

For this reason the process described as *evaporation* should now cease, and should be replaced by another for the purpose of continuing the inspissation of the syrup to a point somewhat beyond that of its perfect saturation when boiling. Although this operation cannot be effected without evaporation, it demands the application of some plan by which it may be performed with the smallest possible risk of the occurrence of those changes which are so liable to result from a high temperature.

We have already seen that sugar is soluble in $\frac{1}{2}$ its weight of cold, and in $\frac{1}{3}$ of its weight of boiling water; consequently boiling syrup, when thoroughly saturated, must deposit on cooling, $\frac{2}{3}$ of its sugar, the remaining $\frac{1}{3}$ being held in solution by the water. In other words, a boiling syrup, composed of 5 lbs. of sugar, and 1 lb. of water, will, when it becomes cold, have deposited in the form of crystals 3 lbs. of solid sugar, the other 2 lbs. being dissolved in the 1 lb. of water, thus constituting 3 lbs. of mother liquor or molasses.

The temperature required for the ebullition of a syrup, consisting of 5 parts of sugar and 1 part of water, varies according to its purity from 238° to 239° Fahr. But as it is desirable in sugar-making to carry the evaporation somewhat beyond the point of saturation, the temperature of the boiling syrup, when of the density usually required, is 240° or 242° , and occasionally somewhat higher.

Syrup cannot be submitted to this temperature without sustaining injury.

If we take a quantity of sugar in the state called crushed lumps,

which is one of almost entire purity, and after dissolving it in an equal weight of water so as to form a syrup, submit it to evaporation in a flat-bottomed copper pan over a naked fire, using the greatest care that the bottom of the pan alone be exposed to the fire, we shall perceive that little change takes place in its appearance at first, but in a short time, as the liquor approaches its granulating point, it gradually acquires a yellowish tint, which becomes deeper, and assumes a reddish color as the process continues. The same results are observed if, instead of an open fire, high pressure steam be employed to effect the evaporation. In neither case, it is probable, has the temperature of the liquid exceeded 240° .

In the *Journal de Pharmacie* for 1842 will be found an account of some most interesting experiments made by M. Soubieran, to illustrate the effect of heat on saccharine liquids. That gentleman exposed syrups to the action of heat in an apparatus so constructed, that as evaporation went forward the water was returned to the sugar almost as soon as it was separated, and the uniform density of the liquid was consequently preserved. The changes produced in the sugar were tested by means of the polariscope, and the following results were observed :—

Syrup, primitive rotation	-	-	+68°
" after 18 hours	-	-	+54
" " 48 "	-	-	+20
" " 90 "	-	-	- 7
" " 114 "	-	-	-16
" " 138 "	-	-	- 8

The syrup now became black and acid. It held suspended in it, and also deposited as a precipitate, a dark brown or black powder. The sugar was entirely decomposed. In another experiment the results were :—

Syrup, primitive rotation	-	-	+71°
" after 18 hours	-	-	- 8
" " 36 "	-	-	-15

The effects in this experiment were much more rapid, as the syrup was exposed to the heat of boiling muriate of lime.

There is no necessity for presenting to the reader a detail of all the experiments performed. It will be sufficient to state, that each of them showed a result corresponding with the above.

These results consisted, 1st. In the gradual disappearance of the cane-sugar. 2d. In its being replaced by the glucose or the sugar of fruits. 3d. In the production of a black carbonaceous powder, and formic and acetic acids.

It was also shown, that these changes were prompt in direct ratio to the degree of heat which the syrup attained, and to the state of concentration of the latter.

The presence of lime in pure syrup retarded the changes; but if only a very small quantity of glucose was found combined in the syrup, lime, on the other hand, tended rather to hasten them.

M. Soubieran next inquired whether these changes took place during the process of refining Muscovado sugar. With this purpose

he visited an establishment in the neighborhood of Paris, in which the syrups were concentrated at a low temperature (*in vacuo*). He then discovered, that by this treatment the syrup underwent no change, and that the glucose originally contained in the Muscovado sugar passed entirely into the treacle.

Another evil to be avoided in the concentration of syrups of high density, is that of caramelization or burning. It may be said, that by ordinary care and attention, the risk of producing this effect, even when the operation is carried on in an open vessel exposed to the direct action of the fire, is not great; but those who are acquainted with the mode of concentration practised in the West Indies know that this accident is unavoidable in those boiling-houses in which the common plant is in use.

In studying this branch of our subject, three circumstances must be attended to; namely, the apparatus best suited to perform it, the kind of syrup to be operated upon, and the knowledge or skill of the person operating.

It is of the highest importance, that every process which enters into the art of sugar-making should be well and completely performed; but if there be one among them to which this is more applicable than to another, it is probably that of concentration. Fortunately, this operation has attracted much attention, and the means devised to perform it have consequently been much ameliorated.

As now conducted in the colonies, with very rare exceptions, concentration is merely the last stage of evaporation to which the cane-juice is submitted in the first copper, or, as it is called, the teache. This vessel, like all the others which adjoin it, is in form the segment of a hollow sphere; its upper rim is surrounded by a lip or flanche, by which it is suspended over the furnace below. The mason work into which this flanche is inserted, is constantly in a glowing heat, so that damping or even withdrawing the fire is insufficient to extinguish the intensity of the temperature to which the syrup in this vessel is always exposed.

By such an arrangement, concentration may, it is true, be effected with considerable rapidity, but never without inducing great loss both in the quantity of sugar produced and also in its quality.

The amount of loss from this cause alone it would be difficult to estimate with accuracy; indeed it varies much in the different colonies, but it may with safety be estimated at 10 per cent.

In Barbadoes an attempt has been made to remedy many of the evils arising from the action of intense heat upon the contents of the teache, and with some success. It consists merely in diminishing the size of the vessel, so that by increasing the number of skips in a given time, the syrup, from the shorter time required for its sojourn in the vessel, is less liable to change than it would be were the vessel larger and the skips less frequent.

I have, when speaking of evaporation, shown the necessity of removing the teache from the other coppers, and of entirely separating from each other two operations which cannot be performed simultaneously. I have now merely to add, *that this is indispensable*.

The colonial sugar-boiler does well in exercising his judgment upon the propriety of adopting or rejecting new schemes, a new plant, or new machinery ; but he certainly can have little judgment to exercise, if he continue much longer the present method of concentration in a spherical pan placed over the same fire that heats the other coppers.

It would be useless to enumerate all the evils that thence arise, for they are too well known, and too generally admitted to require it ; our time will be better occupied in trying to obviate them by means as simple and at a cost as small as possible.

The first improvement upon the present method, therefore, consists in placing the teache over a separate fire, and in giving it a slight modification of form. In the latter respect, it should be a circular vessel about 45 inches in diameter, and 14 or 15 inches in depth, the bottom of which should be slightly convex, that is, arched upwards ; and it may be supplied with a cock for drawing off the syrup when duly concentrated.

The bottom alone should be exposed to the fire ; and to accelerate the operation, this part may be corrugated, or studded with metallic knobs, as before described.

The fireplace may also be modified with advantage, and probably such a plan as the one indicated in Mr. Porter's work on sugar, would be found well-suited for the purpose.

By this arrangement, the heat is more equally distributed over the bottom of the pan, in consequence of the products of combustion being obliged to pass through the different openings into the flue, previously to their escape into the chimney.

The teache, so fitted, resembles somewhat the concentrating pan of the refiner of by-gone days. We can by its means modify the heat applied, without interfering with the evaporation going on in the other vessels ; and the bottom alone being exposed to the fire, there is much less risk of charring or burning the sugar than in the method now in use.

Some years ago a concentrating vessel of a peculiar shape was much in use in the refineries and sugar-houses in France. From the way in which its contents were evacuated, it was called a *chaudière à bascule*. It was a shallow pan, having a mouth-piece or spout, and resembled in shape somewhat a common coal-scuttle.

It was placed upon, but not fixed into, the mason-work of the furnace ; it was, however, attached to it, anteriorly, by means of an iron bolt, in such a manner, that a certain motion was permitted around this point. To the back part was fixed a rope, which passed over a pulley, by which means the vessel could be tilted up, and its contents poured into any receiver.

The furnace on which it was placed resembled in principle the one last described.

The superiority which this pan presents over the former, consists in the facility by which its contents are removed from the action of the fire at the time of skipping. It has never, I believe, been in use in this country ; and even in France, where it was once extensively

employed, it has been entirely superseded by more improved inventions.

Steam has been of late very generally used on the continent, as a means of concentrating the syrups from the beet-root by ebullition under ordinary atmospheric pressure.

The various kinds of apparatus that have been constructed on this principle are far too numerous to mention, and the greater number have already fallen almost into oblivion. Those which have best succeeded consisted of pans of different forms, into which the steam was introduced either by a false bottom or by a spiral tube. The latter mode is preferable.

A concentrating vessel on this plan, when well-constructed, evaporates with very great rapidity. Its employment, also, is necessarily unaccompanied either by charring or the production of caramel, from sudden or intense heat; for the heating surface is immersed in the liquid to be heated, and is never of a temperature sufficiently high to produce its immediate decomposition. For these reasons concentrating vessels of this kind have been most strongly recommended.

But we must remember that the temperature is equally as high in syrups which are caused to boil by means of steam, as in those in which this action is produced by immediate contact with the fire, and that in syrup of high density this temperature is sufficient to convert a large portion of the sugar into glucose in a short space of time.

So far as I can learn, the introduction of these vessels into the colonies has not been attended with any considerable success; which, coupled with the want of adequate skill to repair the apparatus when out of order, has operated against their more general employment.

Indeed, an injury to the steam-pipe, sufficient to allow the smallest possible escape of steam of high pressure into the syrup, would be followed by results far more injurious than what daily occur in the common teache from the application of the fire of the furnace.

Should the proprietor of a sugar estate be desirous of using high pressure steam in his boiling-house, it must be better worth his while to do so at once judiciously and effectively, by combining it with the advantages derived from a diminished atmospheric pressure, although at a somewhat greater cost.

I cannot, therefore, recommend this description of teache; for the advantages which it offers over the chaudière à bascule, or even over a well-constructed copper vessel placed upon its own furnace, are not, on the whole, balanced by its greater cost in the first instance, the increased expense attendant upon its application subsequently, and by the additional trouble and labor incurred by its introduction into a boiling-house, for the accomplishment of so partial an object.

By the above methods the concentration of the syrup is effected by an active ebullition, under the entire pressure of the atmosphere, consequently, at a temperature so high, that the operation must be

carried on with great rapidity, otherwise the sugar would receive great injury, although that produced by charring or burning would be obviated.

To prevent the occurrence of the evils arising from a high temperature, Mr. Howard, in the year 1819, took out a patent for concentrating saccharine liquids "*in vacuo*."

It is well-known that liquids boil at a temperature inversely proportionate to the pressure exerted on their surfaces. If we take a Florence flask, containing a little water, and hold it over the flame of a spirit lamp until the water boils, and the steam escapes freely, then suddenly remove the lamp and cork the flask carefully, it will be perceived that the water will cease to boil, but that on plunging the flask suddenly into cold water, ebullition will recommence, and that it will again cease on holding the flask over the lamp. In this experiment the air is driven out of the flask by the steam, which forms an atmosphere of its own in the upper part of it. When the flask is corked and plunged into water the steam is condensed, a vacuum is formed, and the water begins again to boil, because the pressure has been removed from its surface.

Mr. Howard took advantage of this fact, and reduced the experiment to practical utility. For the purpose he had in view he invented an apparatus consisting of a globular copper vessel, enclosed within an iron or copper jacket, and between the two steam was introduced to heat the syrup contained within the former, which was the boiler or concentrator. To this was affixed a tube for the escape of the vapor as it arose, which was condensed by a jet of water, introduced for the purpose. An air-pump was likewise attached to form the vacuum in the first instance, and afterwards to get rid of the condensed vapor.

Many improvements have been added to the original design of Howard, but the principle has always been retained. The essential ameliorations, however, may be confined to two—the heating of the syrup by a long coil of steam-piping, introduced into the interior of the pan, and the condensation of the vapor, and its ultimate escape by means of an extensive metallic worm, kept cool by the continued pouring of an artificial rain.

I cannot enter into a description of all the modifications that this method of concentrating has been made to undergo. That information can be much better supplied by any of the large copper-smiths, who are in the habit of manufacturing the various kinds of apparatus applied to the manufacture of sugar.

Every vacuum pan should be furnished with a thermometer to point out the temperature to which the syrup contained within it is exposed, and a barometer to measure the amount of exhaustion produced in the vessel. It is customary to consider this exhaustion as a force, and to describe its degree by the number of inches that the mercury in the tube rises to, less than would be produced by the pressure of the atmosphere at the time. For instance, if the pressure of the atmosphere be equal to 30 inches, while that within the partially-exhausted concentrator be equal to three inches only, it is

usually said that an amount of vacuum or exhaustion has been obtained equal to 27 inches of mercury, that being the difference of pressure exerted in the respective cases.

There is no mode of concentrating syrups at present known which offers advantages equal to those of the vacuum pan, when well constructed and in good working order. For to a very large heating surface resulting from the steam jacket, and the extent of steam pipe inserted in the interior of the vessel in the manner of a closely packed spiral, is added the greatly increased evaporating power caused by the diminished pressure on the surface of the liquid.

It has been proved that for every $\frac{1}{10}$ of an inch that the barometer rises or falls, there is a corresponding rise or fall of the boiling point of water equal to $\frac{1.76}{1000}$ of a degree, and consequently that where that fall is equal to 27 inches, the boiling point of water, instead of being at 212° , must be at $164^{\circ}.5$. Under such circumstances a rapid concentration of cane syrup can be effected at a temperature ranging between that point and 130° Fahr., and, as the experiments of M. Soubieran have shown, without the accompaniment of any change in the chemical composition of the sugar.

This plan of concentrating syrup embraces the two conditions essential to the successful performance of the operation, namely, rapidity and a low temperature.

Unfortunately its general adoption—that is, its introduction on every estate, will for ever be impossible, in consequence of the great outlay required for the purchase of the apparatus, the skill required for its management, its liability to get out of order, and the necessity of more efficient workmen for its repairs, than are as yet to be found in the colonies. The first of these objections is not so applicable to large estates as it is to small ones, as they offer a larger scope for getting the return of an adequate interest on the money so invested; and in such a case the others would be overcome by the necessity which would arise of obtaining that knowledge from abroad which is not to be had at home, were there an urgent demand for its supply.

There can be no doubt that, on those estates which, from their extent and the fortunate position of their owners, will admit of the sinking a capital sufficient to obtain the vacuum apparatus, in conjunction with steam defecating and evaporating vessels, and a powerful and well-constructed mill, the ameliorations which would result, both in the quantity and the quality of the products, obtained under a prudent and intelligent management, would fully compensate the expense incurred; but how few are the estates which at the present time are in such fortunate circumstances!

Some years ago Mr. Kneller patented an invention for concentrating saccharine and other liquids. The apparatus consisted of a pan, into which were introduced a number of pipes for the purpose of conveying air into the liquid to be evaporated. The air was forced through the pipes by means of bellows or any other blowing contrivance.

M. Brame Chevalier effected considerable improvements in this plan by substituting high pressure steam for the naked fire as a heat-

ing medium, and hot, or rather dry air, for the cold and humid air of the atmosphere.

This method of concentrating syrup has been in use both in England and in France, although now discontinued in both countries.

The operation was rapid, and the temperature was preserved between 180° and 190° . It is probable that if the vacuum pan had not been known, and in general employment at the time, the introduction of this plan would have met with greater encouragement.

But the results obtained by the latter were not equal to those of the former, whilst its first cost was little inferior, and its working expenses, &c., were quite as great.

Mr. Augustus Gadesden, one of the most intelligent sugar refiners of London, introduced, some months since, to the notice of the West India proprietary body resident in the metropolis, a plan for concentrating syrup at a low temperature over the open fire, and at the ordinary pressure of the atmosphere.

This gentleman's apparatus consists of an iron or copper pan, having nearly the form of the half of a hollow cylinder, in which is placed a drum or wheel adapted to the shape of the vessel, and formed of a number of metal rods, so arranged that the evaporating surface given to the syrup is increased as much as possible. The wheel, half its circumference being immersed in the liquid, is kept constantly revolving; so that by exposing fresh portions of the heated syrup to the action of the atmosphere at each succeeding revolution, the evaporation of the aqueous particles is rendered more rapid than it otherwise would be while the temperature is at the same time in a corresponding degree reduced.

The time required to take off a skip in a pan containing one ton of sugar varies from two and a half to four hours, and the temperature of the syrup varies from 150° to 180° .

From the principles on which this method of concentration are based, it is evident that its successful working will depend upon the degree of dryness of the atmosphere, and on the rapidity with which the air passes over the surface of the syrup. The apparatus should therefore always, when it is practicable, be placed at the windward side of the boiling house, at all events it should be beyond the influence of the vapors which arise from the evaporating vessels.

I used a small concentrating vessel of this description in the island of Madeira. The time required for taking off a strike containing fourteen moulds of fifty pounds each was two hours, and two hours and a half. The results were highly satisfactory; the temperature never exceeded 160° . It has also been in operation during two crops in Berbice, where its success appears to have answered every expectation formed of it. Such, however, has not been the case in the trials made of it in Barbadoes, for accounts from that island state that it occasioned a considerable amount of froth, and that the time occupied in taking off a skip was longer than was contemplated.

In Berbice the pan was worked by an intelligent boiler man sent out from this country for the purpose; in the latter instance its management was intrusted to the sugar boilers of the colony.

The frothing no doubt was owing to the incomplete defecation of the cane-juice, and the non-separation of the whole of the albuminous principles ; if so, the addition of a drachm or two of washed butter would in all probability have proved a remedy.

In the prospectus it is stated, that this method of concentration is not intended to supersede the vacuum process, but that it is recommended as a cheap and valuable substitute for it on estates where, owing to its high price, the latter cannot be introduced with advantage.

The great simplicity of its construction and its easy management certainly recommend this pan, if it is found in other respects to answer equally well the purposes proposed.

In whatever vessel the concentration may be performed, it is an operation which always requires considerable skill and ability to conduct properly. It is in this stage of the manufacture that the benefits derived from the careful defecation and evaporation of the cane-juice will be evinced ; for the difficulties will be slight, if those operations have been efficiently performed, compared with those which are certain now to arise if negligence or carelessness have been evinced in the antecedent stages.

When concentration is performed at a high temperature, that is, by ebullition under the ordinary atmospheric pressure, whether the heating medium be the naked fire or high pressure steam, our principal object ought to be to arrive at "*proof*" with as little delay as possible. This should likewise be our object when the operation is performed at a much lower temperature ; but in the latter case expedition is not of such extreme importance, and we therefore have it in our power to induce crystallization of the sugar simultaneously with the concentration of the syrup.

The term "*proof*" is applied to certain appearances which indicate that the syrup has arrived at the degree of concentration required for the deposition of at least $\frac{2}{3}$ of the quantity of sugar which it contains. It is obvious that these appearances will be modified according to the purity or impurity of the syrup and its stage of concentration.

When the cane-juice is of a healthy character, and when all the preceding operations have been well performed, the following appearances are observed during its concentration in the open pan. The boiling syrup is clear and transparent, it does not mount or rise in foam or froth, the ebullition is quick and sharp, the bubbles succeeding each other with rapidity, and bursting as they arise. As the inspissation advances, the syrup is seen to run from the edge of the skimmer in a thin broad sheet, which separates as if it were cut sharply off with a pair of scissors, and never hangs down in long adhesive strings ; it communicates to the eye the sensation of being a sharp, short crispy fluid, possessing little tenacity or viscosity, and the sound of its ebullition communicates to the ear a similar idea.

On taking a very small quantity of syrup as it approaches proof between the forefinger and thumb, and permitting it to remain until sufficiently cool, we shall perceive, on separating these parts from

each other,—1st, that it divides into two small portions or drops, the lower one of which, attached to the thumb, is larger than that adhering to the finger; 2d, that the portions become pretty nearly equal, and their division is effected by a wider separation of the finger and thumb; 3d, on a separation to the extent of half an inch, a slight column of syrup is produced which remains for an instant, and then breaks at its inferior extremity; 4th, a thin thread is produced on a somewhat wider separation, and on breaking the extremity curls up in the form of a hook, and gradually retracts to the portion which remains on the finger; 5th, on a still wider separation, the thread on breaking is so thin as to be scarcely perceptible at its lower end, which is drawn upwards in the form of a cork-screw.

If the concentration be carried a little beyond this point, the thread when broken does not retract upon itself.

The thermometer, as the inspissation proceeds, will indicate a temperature from 236° to 242° ; and the proportion of water contained in the syrup will be, in the instances denoted by Nos. 1 and 2, 16 parts in 100, while in the 5th it will be less than 10 parts in 100.

The latter is the highest proof that can with safety be given to syrups by concentration over the fire; in the colonial boiling houses the proportion of water is rarely reduced below 12 per 100.

When concentration is performed at a low temperature, the amount of water may be very much diminished, indeed it may be entirely dissipated, and the sugar may be obtained in a perfectly dry state.

It is not, however, judicious so to do; and the best *point* that the sugar boiler should seek to obtain is that in which the relative amounts of sugar and water are as 90 to 10. In this case the amount of crystallized sugar obtained will be 70 lbs., and that of molasses 30 lbs., in every 100 lbs. It may frequently happen that this point will be too high, and that a better result may be obtained by allowing the concentrated syrup to be a little more *free*.

There appears to be an opinion pretty generally received, that by "*boiling stiff*" at a low temperature, there is considerable economy in fuel, time and labor, and that the extract obtained is greater. This is an error; for in all these respects the results are much the same, whether the operation be a continuous one, or whether it be conducted twice or thrice over.

I mean, that if, after having obtained as much of the sugar as is produced by a primary crystallization of the syrup, we submit the mother liquor which escapes to a second concentration and crystallization, the quantity of fuel will not be increased, the time required for the effective drainage or curing will be shorter, and the labor will be to a very small degree only augmented, whilst the amount of extract will be equally great, and its marketable value will be higher.

There is also another object which the sugar-boiler attempts to obtain while concentrating syrup at a low temperature; namely, the simultaneous production of the crystallization of the sugar. This should always be effected, if possible. For this purpose, the operation should commence upon a comparatively small quantity of syrup. The pan should be filled only to one-third of its capacity, syrup be-

ing slowly added as the evaporation of its water proceeds, until incipient granulation commences, which is known by the appearance of *spark*, that is, the reflection of a ray of light from an incipient granule, exhibited in the syrup when drawn between the finger and thumb.

When *spark* is perceived, a fresh charge of syrup is to be added, and the concentration should be pushed until a portion of the sugar is crystallized.

The supply of syrup should be continued, (but always in small quantities at a time, care being taken that the grain, having once formed, is not re-dissolved,) until the pan is sufficiently full, when the skip must be taken off, should it in the opinion of the boilerman be duly concentrated.

The judicious performance of this operation requires both practice and skill, neither of which can be acquired from any written description.

The foregoing remarks are applicable to cane-syrups of good quality, and which have been properly defecated and evaporated. But how frequently does it happen that syrups are found to have a very different character from the above, and to offer other appearances during their concentration !

Acid Syrups may arise from many causes : 1st, from disease or injury in the canes ; 2d, from the incipient souring of the cane-juice ; 3d, from the deficient quantity of lime employed in defecation, &c. From whatever cause the acidity may have arisen, syrups of this kind generally want transparency, and their dimness or mudiness increases as the evaporation goes forward. They boil tolerably freely at first, but as their density increases, the ebullition is less brisk, and the color becomes somewhat darker. The latter is more remarkably the case during concentration, when this operation is effected at a high temperature ; but if it be conducted *in vacuo*, or by other means which permit of its performance at a temperature of 160° or 170°, the color is little heightened. When this evil exists only in a moderate degree the sugars have a light color, but the grain is small, and they do not cure quickly. The molasses are more abundant than the point to which concentration has been carried would indicate, and their crystallization is often difficult to effect.

The remedy for this condition of the syrup would be the addition of a little lime-water during the evaporating process ; but its prevention in the first place, and where that is impracticable, (if it ever be,) the neutralization of the acid in the clarifiers, should be effected.

Alkaline Syrups may be caused by the too abundant addition of lime to the cane-juice, either in the clarifiers or afterwards. When this evil exists in a moderate degree only, the injurious consequences may be confined to the production of too dark a color in the syrup, and in the sugar obtained from it. The grain of sugar produced from such syrup is generally good, and the molasses separate readily.

When the excess of lime has been very great, or when this substance has been employed so as to completely neutralize the cane-juice in which the lactic acid fermentation has commenced, the syrup during concentration will probably present features resembling those which are observed in what may be called—

Saline and Viscid Syrups.—This state of the syrup results from many causes, which have been explained in the first part of the book. Anything, in fact, which causes an unusual excess of the saline constituents in the cane-juice, as their absorption from the soil, or their formation by the addition of lime to neutralize cane-juice which has become sour, or whatever may establish the viscous fermentation in this fluid, must be so regarded. When thus affected, the concentration of the syrup at a high temperature is often impracticable. It is viscid, gummy, and adhesive, running from the ladle or edge of the skimmer in long strings.

Its ebullition is very irregular and very slow; the bubbles seem to traverse half the surface of the liquid before they burst; they appear like large adhesive blisters, which not unfrequently collapse, and for a moment leave the heated mass in a state of repose. I once witnessed a syrup of this kind burst into a flame from the fire under the teache being urged with a hope of expediting the concentration.

The sugars produced are dark, heavy, clammy, and deliquescent. Occasionally their granulation will not take place at all.

Syrups of this kind demand concentration at a low temperature; it is the only means by which can be obtained from them a remunerating quantity of a marketable extract.

Albuminous Syrups.—From imperfect defecation a small quantity of albumen and caseine may remain dissolved in the syrup; and for reasons already explained, this may be caused either by the presence of an acid or an alkali.

Albuminous syrups always produce during their evaporation and concentration a large quantity of froth, which rises faster than the skimmer can take away, and is often the source of considerable annoyance. The addition of a small quantity of butter or sweet oil will generally cause the froth to disappear, as if by magic, and the rest of the operation to go on favorably. The presence of the small quantity of this substance sufficient to effect the purpose is not injurious; on the contrary, it seems to facilitate the process of curing.

It occasionally happens, that after due concentration the syrup, instead of showing a disposition to granulate, assumes the appearance of a semi-fluid substance of great tenacity and adhesiveness, such as we may suppose would be produced by a mixture of equal parts of mucilage and sugar.

The term "*smear*" is applied by sugar-refiners to syrups of this kind.

It is a condition not confined to impure syrups only, but it likewise occasionally occurs in those of the greatest purity. It takes place, however, much more frequently in the former, particularly in those which contain a large quantity of saline matters, as in green syrups, molasses, &c.

The real nature of *smear* is not known. It probably depends upon some electro-chemical change, excited in the molecules of the sugar during the process of concentration; but which, however, is not permanent, for syrups thus affected will, if left to themselves for some time, gradually become more and more crystalline; or if they be diluted by the addition of a little water, and be again concentrated, granulation will ensue, as if nothing had previously happened. Generally their exposure in a heater for a short time to such a temperature as will preserve their fluidity, is sufficient to destroy this character, and to restore the crystalline powers of the sugar.

Before proceeding farther, I must remind the sugar-boiler that whether he concentrates his syrups highly or the reverse, that is, to a point that indicates the amount of water at less than ten per cent., or to one that shows this quantity to be somewhat greater than twelve per cent.; in other words, where the molasses will be less than thirty per cent., or greater than thirty-six per cent., he must not lose sight of the process which is to succeed, and to the effective performance of which the syrup, during concentration, ought to be adapted; namely, the complete separation of the mother liquor, or molasses, from the sugar, with facility and despatch.

I believe that this point has not been sufficiently attended to by the persons in charge of the few vacuum pans, which are at present in operation in the colonies. It is probably owing to this cause that the sugars hitherto produced by that apparatus evince, by their clamminess and stickiness, the imperfect curing which they have undergone, and which either diminishes their marketable value, or demands an expensive process of liquoring to remedy.

The foregoing calculations it may, perhaps, be necessary to state, are based upon the supposition that syrup is composed of sugar and water only. But when foreign substances are likewise present, as is the case when the syrup is obtained immediately from cane-juice, some allowance must be made for the disturbing action produced by them, and which will be in direct ratio to their amount. The changes produced in the cane-juice during the various operations to which it is submitted when conducted as they at present are, will likewise cause other deviations from the rule. Thus we generally find that the quantity of sugar is less, and that of the molasses greater, than the amount of water contained in the syrup is sufficient to account for.

In the manufacture of sugar as at present pursued in the colonies, the syrup, after its due concentration in the teache, is passed directly into the coolers. This operation is denominated "*skipping*" or "*striking*," and is effected either by ladling, or by means of a copper skipper, a vessel so adapted in shape as to fit the interior of the teache, and to admit at once the contents of that vessel through a valve made for that purpose. The skipper when charged is rapidly raised by a crane, and it is supposed, that the great injury which the sugar is apt to undergo at this particular time, owing to the intense heat operating upon a highly inspissated syrup, is thus in a great measure prevented.

The coolers usually employed are shallow wooden troughs, varying in size from five to ten feet in length, and from three to five feet in width, but in depth they never exceed one foot or sixteen inches. In some of the islands these vessels are made of copper, but with what object I am ignorant.

Two skips at least, and usually several, are shot into each cooler, where they are allowed to remain until granulation has commenced, and until the saccharine mass has acquired sufficient solidity to permit of its transportation to the hogshead, without risk of its leaking entirely into the molasses cistern.

During its sojourn in the cooler, the hot and inspissated syrup is occasionally stirred about for the purpose of mixing together the different skips, and to obtain throughout them a uniform temperature; in other words, to reduce them to the temperature of the surrounding atmosphere, with as little delay as possible. If such have been the motives which have caused the planter hitherto to treat his concentrated syrups in this manner, assuredly he could have devised no plan better suited to obtain his ends, for the position of the coolers in the boiling-house exposes their contents to the strong gusts of wind which are admitted on all sides into the building, and the shallowness of these vessels causes the heated syrup which they contain to present a very large surface to the cooling influence of the atmosphere.

By pursuing this plan, the inspissated syrup is most effectually and rapidly *cooled*; and as at the state of concentration to which it has been previously brought it contains a quantity of sugar more than sufficient for its saturation, the latter is deposited in an amorphous or semi-crystalline state, and diffused through the chilled and viscid molasses.

The half-crystallized sugar and the mother liquor or molasses being thus blended together, form a doughy and homogeneous mass, which is cured with difficulty, and presenting in the sugar obtained an imperfect crystallization, which is denominated by refiners false grain. Moreover, that portion of the molasses which escapes carries with it a large quantity of sugar, while that which remains adheres to each small particle of sugar with great tenacity, and is there retained by a kind of capillary attraction.

We see, therefore, that by pursuing the system now in use the *cooling* of the syrup is promoted, but its crystallization and perfect curing are prevented.

When the mass of sugar and molasses has become sufficiently cooled, it is dug out of the cooler, shovelled into a bucket or some other vessel, carried into the curing house, and then thrown into the hogshead as if it were so much manure, where it remains until the drainage of the molasses is sufficiently complete to admit of its shipment. To assist the cooling process the curing-house is generally open to windward, and it is not unfrequently kept as cool as possible.

Had the planter intended to convert the cane-juice into dough or bird-lime, he could scarcely have invented a more successful method of accomplishing his purpose; but to obtain sugar, a more ill-judged method, or one more defective in principle, could not be employed.

Concentrated cane-juice, even when in a state of the greatest purity, always contains a certain amount of saline matters, more or less soluble, which, by their combining with sugar, form highly deliquescent compounds.

Whatever may be the reason, cane-juice is at present seldom admitted into the clarifiers free from a small admixture with lactic acid, which demands the employment of a large quantity of lime for its neutralization.

Generally an excess of lime remains in the syrup, its separation not having been effected by the use of filters. In this way the quantity of saline matter is preternaturally increased.

Cane-juice likewise contains a considerable quantity of a highly hygroscopic organic substance, which I have called the deliquescent matter of Hervey.

These substances are not crystallizable; and were the concentrated syrup treated in a proper manner they would quickly separate from the sugar, and pass away in solution in the mother liquor. But by pursuing the present system all the constituents of the cane-juice are bound up together, and form a homogeneous, pasty, and semi-crystalline mass, in which the vinous fermentation is sooner or later established.

The result is as might, *à priori*, be imagined. The sugar being bound up with these foreign substances, gradually melts away like ice in warm weather. The drainage, which is seen issuing on all sides from the hogshead, does not consist merely of the mother liquor—that is, of the sugar held in solution by the water retained in the syrup, and the uncrystallizable and deliquescent saline bodies above mentioned, but it is formed by the gradual melting of the entire contents of the cask—a bodily wasting away of the product of all our labors.

Thus a hogshead containing 200 imperial gallons of concentrated syrup will weigh about 2,860 lbs. net, which ought to produce, if the manufacture had been properly conducted, 2,000 lbs. of good sugar and 860 lbs. of molasses, deliverable in England, but which usually gives only 1,680 lbs. of an imperfectly crystallized extract, and 660 lbs. of molasses, the remainder being the loss sustained by leakage, &c. From the 1,680 lbs. of sugar, when it has been submitted to a process of refining, rarely more than 75 per cent. of crystallized sugar is obtained in the form of loaves, lumps, pieces, and bastards; there being 20 per cent. of uncrystallizable treacle and 5 per cent. loss.

This enormous loss in crystallized product, it is true, is not caused exclusively by the improper system of *potting* now pursued; it is caused in part by other errors also, committed in the antecedent stages of the manufacture. But it is to the former cause alone that the slow and imperfect drainage, the loss in weight occurring during the voyage home, the leakage of part of the crystallizable sugar, and the retention of the saline and other uncrystallizable matters, the presence of which is so injurious to the sugar, are owing.

It is said that the colonial sugar boiler, in pursuing the present method of potting and skipping, only follows the example of the sugar

refiner of former years, who skipped his syrup when sufficiently concentrated into a cooler, where it remained (being stirred occasionally with an oar) until crystallization was established. There is, however, no parallel between the two cases. It was the business of the refiner to form his sugar into loaves and lumps; and it was necessary that they should be compact, and present a uniformity of grain. He was therefore compelled to skip his concentrated syrup into some vessel which would permit of its being stirred or moved about during the time that granulation was commencing. But he took every care that the syrup should not be chilled, and while still in a fluid state he poured it into the moulds in which the granulation was completed. Had he acted as the planter now does, the sugar would not have drained, the after processes would have been accomplished with difficulty, and would have been attended with a heavy loss.

Of all the branches into which the manufacture of sugar is divided, none admit of being so easily reformed as the one before us; but here, as elsewhere, a knowledge of the principles which should guide us in its performance is essential.

When the syrup has arrived at that point of concentration which is desirable, the next objects to be attained are, 1st, as large an amount of crystallization as possible; 2d, as distinct and perfect a crystallization as possible; and 3d, as a result of the two former, an easy separation of the molasses.

Crystallization may be considered as a variety of the attractive force by which particles of similar matter are drawn together, and are then so arranged that the whole puts on some regular and determined form; so that it not unfrequently happens that by a merely external examination of this form of crystal, its nature and composition may be ascertained.

To enable particles of matter to assume the regularity of form which crystals exhibit, it is obvious that they must have *freedom of motion*. This is usually effected by reducing the substance to be acted upon either to a gaseous or liquid state.

When a substance is reduced to a liquid state, by its solution in some appropriate menstruum, as water, alcohol, &c., its particles are considered to be disposed at regular distances in the liquid. If the quantity of liquid be considerable, the particles are too far apart to attract each other; but if the quantity of the liquid be diminished by evaporation, the distances diminish, and at length the particles entering within the sphere of each other's attraction are drawn together by certain laws which induce them to assume a definite form, as a cube, a rhomb, a prism, &c. Other particles remain dissolved in the liquid, forming what is called the mother liquor.

That this phenomenon may be effectually produced, it is essential, as just stated, that the particles have great freedom of motion, and whatever tends to prevent this tends likewise to check crystallization. If the menstruum be limpid and thin, the effect is produced most favorably; but if it be thick, adhesive, and tenacious, the reverse will occur.

The size and regularity of form in the crystals will be influenced

by the rapidity of the evaporation. If this process be slowly conducted, the particles unite with great regularity; if it be hurried, the crystals are irregular and confused. We have good examples of the two cases in loaf sugar and sugar candy.

If these data be applied to the management of the syrup when skipped, such a plan should be pursued that the syrup may be preserved in a state as free as possible from viscosity or tenacity, so as to admit of the easy approximation of the saccharine particles. For this purpose the contact of cold air, and particularly draughts of wind, should be avoided; and to prevent the too sudden or rapid cooling of the syrup, it should be exposed to a gentle and uniform temperature. That the crystals of the sugar may be perfect in form, distinct, and sufficiently large, the syrup should be placed in such a condition that the process of crystallization shall not be too hurried. It must, however, at the same time be borne in mind, that the results of the operation must be regarded in a commercial rather than chemical point of view; consequently, that the time allowed for its performance should be no more than what is absolutely necessary; for in this, as in all other branches of manufacture, time is capital, and can be spared only at a certain sacrifice.

To effect these objects, the concentrated syrup should be skipped immediately into moulds or forms, or into large wooden cases of a size sufficient to contain a hogshead of sugar. In either case these receivers should be placed in a curing house, the uniform temperature of which is carefully preserved, and from which all currents of air are excluded.

When forms or moulds are employed, their size should be as great as can be given to them consistent with a facility of their being lifted and reversed when their contents are required to be taken away; because they will occupy less space, a less amount of labor will be required to discharge an equal weight of sugar, the cooling of the syrup, in consequence of its greater bulk, will proceed more slowly, consequently the crystallization will go forward for a longer time, and will in every respect be more complete and perfect.

The moulds having the holes at their extremities plugged up with a piece of rag, are to be placed side by side over jars which rest on the *floor* of the curing-house; or they may be fixed in holes cut in tables made for the purpose, under which are gutters for carrying away the molasses as they escape. These vessels are to be filled in succession with the syrup from the teache; and when crystallization has advanced so far as to form a crust or pellicle on the surface of the syrup, a wooden knife must be introduced, for the purpose of separating the crystals on the surface and those which adhere to the sides of the vessel, and dispersing them throughout the mass. This operation should be repeated once or twice, otherwise the crystals which always appear first at those parts of the syrup most exposed to the cooling action of the atmosphere will drive the liquid portion to the centre of the cone. The drainage under such circumstances would be tedious and incomplete, and the lower half of the sugar likewise, from the percolation of the dark molasses through it, would

be soiled. Moreover, if the cooling took place very rapidly, the crystallization of the sugar would be replaced by the formation of compact rocky masses, which would never undergo complete drainage.

When the contents of the moulds have attained throughout the temperature of the curing-house, which will be in 24 or 36 hours, the plugs should be withdrawn, and the molasses allowed to escape.

It sometimes happens, that in consequence of an insufficient concentration of the syrup the sugar in the moulds is too free, and a quantity of crystals may escape with the molasses. When this is the case, it is advisable to introduce into the hole at the apex of the mould a hollow cone of tin or copper similar in shape to an extinguisher, which is pierced with a number of small holes of such a size as to admit of the escape of the molasses, but which will retain the crystals of the sugar.

The curing-house ought to preserve a great uniformity of temperature—that of 90° being the one best suited for all purposes. This is readily effected without artificial aid within the tropics. All currents of air should be prevented, and light should be freely admitted; the windows which are now left open should be glazed and closed, or, still better, glass sky-lights made in the roof may be advantageously substituted for them.

The refiners of Europe always employ *moulds* for potting their sugars, and in many respects they offer advantages over the kind of vessel I am about to describe, for the drainage from them is more rapid and more complete, and the sugar in consequence is more speedily and more effectually cured. They also admit of a more easy and more successful syruing afterwards, should it be desirable to submit the sugar to that operation. On the other hand, their use requires more labor, a more spacious curing-house, and I think that the crystals of the sugar are both smaller and less perfect than when the following plan is employed, which, perhaps, on the whole, at the present time, is the one best suited to the colonies.

A sufficient number of water-tight wooden chests or boxes, varying in size from three to four and a half feet cube, according to the quantity of produce daily obtained, are to be placed side by side on the joists of the curing-house, in such a way as to leave between every two rows a passage or gangway for the use of the people employed in the works.

Each box should be provided with a false bottom placed about two inches above the lower one. It may be formed of a sheet of metal perforated with a great number of minute holes, of fine metallic wire or of wicker-work, and must be so strengthened as to admit of its supporting the weight of the superjacent sugar. The false bottom may be covered over with a piece of coarse sacking, on which is to be spread a layer of dry sugar, about an inch in thickness. A wooden plug, a cock, or, still better, an American molasses' slide, is to be inserted into the space between the two bottoms; the apparatus is then complete.

Skip after skip of the concentrated syrup is to be poured into this vessel until it is full. Each skip as it is poured in must be blended

with those which have preceded it, so as to equalize the temperature of the whole.

When the vessel is filled, its contents must be allowed to remain in a state of repose until a film of crystals is seen upon the surface. A slight stirring will then be required to disperse the crystals, which must be repeated occasionally until all danger of the formation of a cavity in the centre is past.

So large a bulk of hot syrup necessarily requires a much longer period to cool than would be demanded by the contents of a large mould. Three or four days will, however, be quite sufficient for the purpose.

When the mass has set, has become solid, and has acquired throughout the temperature of the curing-house, the plug must be withdrawn and the molasses suffered to escape.

The form of the crystallizing vessel may be modified in a variety of ways. The following may be employed with advantage. Instead of a false bottom it may have three or four holes of three quarters of an inch in diameter bored into it. These holes should be fitted with wooden plugs, which can be withdrawn when the drainage is required to begin.

When the concentration of the syrup has been effected at a low temperature, in such wise that crystallization of the sugar has taken place at the same time, it is customary to skip into a heater, that is, a vessel surrounded by a steam jacket. By this means the temperature of the syrup is preserved, and very frequently augmented several degrees. It is here kept for some time, being frequently and briskly stirred, so as to mix together the different skips, to equalize their temperature, and to diffuse the crystals as much as possible.

In consequence of the regulated degree of heat to which the syrup is submitted during this process, it is presumed to be placed in a condition best suited to assist the crystallization of that portion of it which, from over saturation, has a tendency to separate in a solid form, and which would do so in an amorphous or semi-crystalline state, were the temperature not kept up. While in this fluid state it is passed into the moulds, and is then treated in the manner described.

This operation is essential to the refiner, but it is questionable whether the advantages that it offers to the planter are sufficient to compensate for the additional trouble and expense that its employment would entail.

Indeed, I think the use of the heater may safely be dispensed with in those colonial boiling-houses where the syrups are concentrated at a low temperature, and one of the former plans of skipping into cold granulating vessels be substituted for it. When concentration is produced by ebullition in the open air, the employment of the heater would be inadmissible.

It is now several years since a patent was taken out by Mr. Hague for "certain improvements in the method of expelling molasses or syrup from sugar." This plan consists in placing the concentrated syrup in a vessel which has a false bottom perforated with many minute holes. When the mass is sufficiently consolidated, a vacuum

is formed in the space between the two bottoms, into which is inserted the suction-pipe of an air-pump for the purpose. By the pressure of the atmosphere it was imagined that the molasses would be expelled, leaving behind them the solid sugar.

The same principles are carried out in an improved manner in the pneumatic pan lately patented by Mr. Cooper.

In the granulating or curing apparatus of the latter gentleman, the concentrated syrup can be skipped directly from the teache; and when the granulation is completed, on a sufficient amount of exhaustion being effected, the resilience of the cane-work, of which the false bottom is constructed, is overcome, and the molasses are forced away, leaving the crystallized sugar behind.

Pneumatic curing vessels, however, of whatsoever construction they may be, perform the purposes for which they are intended very inefficiently, when employed upon the badly granulated sugars made at the present time in the colonies. The attraction between the false grain of the sugar and the surrounding viscid molasses cannot in this manner be overcome; for whatever may be the degree of vacuum obtained, a large portion of the soft and yielding sugar is forced away in the drainage, and a quantity of molasses more or less considerable is still retained. But when the sugar has been manufactured in a skilful manner, when the grain is large, bold, and distinct, an apparatus of this kind, there can be little doubt, may be employed with considerable benefit in the economization of the time at present required for the "*curing*."

When the drainage from the sugar in the moulds or chests has ceased, or when the molasses come away very slowly, it is at all times advisable to assist their more perfect separation by artificial means. The process by which this object is obtained may be said to constitute the essential part of the art of refining, as by it we have it in our power, provided the previous stages of the manufacture have been skilfully conducted, of obtaining sugar of the most perfect whiteness and purity—the only limits in this respect being the commercial consideration of profit and loss.

The means formerly employed by the refiner and beet-root sugar manufacturers of Europe for effecting this object, consisted in applying to the upper surface of the sugar a "*magma*," composed of clay beaten up with water to the consistence of a thick cream. The water being in a great measure retained in the clay, as in a sponge, separates slowly from it, and percolates gently and gradually through the sugar, forcing the dark molasses before it. In the course of a few days the clay becomes dry; it is then removed, a fresh supply is administered, and this is repeated until the sugar acquires the color desired.

This process is still pursued in Cuba and the Brazils; but there are certain disadvantages attending it which are sufficient to cause its total abolition in every boiling-house, namely, its inefficiency for the purposes intended, the great loss of weight produced by the dissolution of the granulated sugar in the water, and the length of time required for its performance. The following system ought always to be substituted for it.

Liquoring or syruping the sugar has for its object the replacing of the dark-colored molasses by another liquid of greater purity and of lighter color. The liquid to be selected for this purpose must be of a sufficient density to force the molasses before it as speedily as can be done with benefit; it must be incapable of dissolving any portion of the sugar with which it comes in contact; it must be much lighter in color than the molasses to be displaced; it must be innocuous to health, and of such a nature as not to diminish the degree of sweetness of the entire mass.

The only liquid with which we are acquainted, that possesses all these qualifications, is a light-colored syrup, of such a density as to indicate its saturation at the temperature of the atmosphere.

When, in the judgment of the sugar-boiler, the contents of the moulds or cases are sufficiently cured to admit of their being liquored, he must proceed as follows. The crust which always exists on the upper surface of the sugar must be removed to the depth of one or two inches, and an even and perfectly smooth face must be given to the sugar below by means of a curved knife and a towel. The sugar which has been removed must be crushed fine, and mixed with cold water to the consistence of mortar, so as to form a magma, or paste, free from lumps, in which state it is to be returned, and spread over the face of the sugar as evenly as possible.

In a few hours the face of the sugar will have become again sufficiently free from moisture to allow the liquor or syrup to be poured on it.

To prepare the syrup we may employ either the refined lumps imported for the purpose, or sugar expressly prepared in the boiling-house; or, perhaps, what will in general be found most advantageous, a quantity of syrup taken from the evaporating vessel, and rendered of the density required by the addition of the necessary quantity of footings or headings.

However prepared, the syrup must have the color which the quality of sugar we may be desirous of obtaining will demand. For this purpose, when the liquor is not prepared from the refined sugar, it is essential that it should be passed through a charcoal filter, or that it shall be blown up with fine charcoal and blood, and afterwards filtered through bags.

If the syrup be prepared from sugar alone, its concentration must be carried on until it has a density of 31° 5' Beaumé, when cold. If it be prepared from liquor from the evaporating vessel and dense and pasty footings, its density must be about one degree higher.

When perfectly cold, the syrup must be poured to the depth of two inches over the sugar prepared in the manner just described; and it is necessary that a smooth and even face shall have been formed; otherwise the syrup is liable to percolate very unequally, and often to escape through holes and passages which it makes for itself.

In the colonies it will seldom be necessary to "syrup" more than once; but if a still better color be required, the operation may be repeated. We may, if we choose, as I have already stated, by the use of very colorless syrup, produce a sugar equal to the best crushed

lumps of the European refiner. It may, however, be doubted whether carrying the process of syruing to the extent practised in Europe will be, on the whole, profitable.

Sugars which have undergone this process, even to a limited extent, are not improved in color only, but they are also much drier, less adhesive, their grain is more distinct, and they suffer no loss of weight from leakage during the voyage home.

The process of syruing or liquoring the sugar is not merely an improvement upon the old method of claying, for the principles on which the two act are different. By the use of the clay we obtain merely the beneficial results which are caused by the washing of the crystals with water, and these are effected at a considerable loss. For the water as it percolates dissolves more or less of the sugar with which in its passage it comes into contact; and in consequence of its union with the molasses, its bleaching effects are confined to a small distance beneath the surface. But a solution of sugar of the required density being in a state of perfect saturation cannot so act: it already contains as much sugar as it is capable of dissolving at the surrounding temperature; and its action is consequently confined to the purely mechanical one, of forcing by its weight and pressure the molasses before it, and of occupying their place.

On the surface of sugar which has been syrued there is formed a hard crust of very little thickness, but which is always of a deeper color than the sugar underneath it. This crust may be removed, or it may be bleached by covering it with a damp cloth, which acts in the same way as moist clay.

It has been recommended to use strong spirits of wine for the purpose of discharging the molasses from sugar. As this plan presents no advantages, and as it is one attended with considerable expense, it has never been generally adopted.

When the pneumatic curing pan is employed, the molasses may always be effectually discharged from the interstices of the sugar by causing a quantity of fine syrup to be forced through when the curing is sufficiently complete. But the quantity of syrup required for the purpose must be very considerable, owing to the form of the pan and the large surface of sugar which is exposed. The process, therefore, when applied under these circumstances, will necessarily be a very expensive one.

When the sugar after it has been syrued is sufficiently dry, it must be taken out of the moulds and cases, and put into hogsheads or bags ready for its shipment. Those portions, however, which still remain moist, may be used for making the syrup for liquoring: they may be put into smaller vessels to undergo a renewed drainage, or, if very clammy, they may be returned into the concentrating vessel, and there be mixed with the syrup which it contains.

When practicable, some advantage would be obtained by exposing the sugar to the heat of a stove for a day or two previously to its being placed in the hogsheads, but not sufficient to repay the expense of erecting a building for the purpose.

By the mode at present pursued of potting in the hogshead, the

drainage as it escapes passes directly into the molasses' cistern, a cavity situated immediately beneath the beams of the curing house. This cistern is consequently exposed and open. It is lined with cement, and is seldom in a perfect state of repair.

Here the molasses remain until they are shipped, or until they are required for distillation. The result is, as might be expected, rats, cockroaches, and other vermin, creep in and assist, by their decomposition, the rapidity and degree of the fermentation, which, under any circumstances, is sooner or later certain to arise.

In the palmy days of West India prosperity this lax and improper system may in some degree have been excusable, owing to the highly remunerative prices obtained for all the produce; at present it can only be considered as one of extravagance, and therefore of loss.

In the first place, a quantity of molasses is always lost, either in consequence of the leakage of the cistern, or from its absorption by the cement. 2. Owing to the evaporation constantly going on, a quantity of a soft, whitish, and amorphous sugar, is precipitated to the bottom of the cistern. 3. The vinous and acetous fermentation set in, and a part of the saccharine matter is converted into carbonic acid, alcohol, and acetic acid or vinegar, while another part is converted into uncrystallizable glucose. Thus from a fluid possessing a bland, sweet, and sugary taste, the molasses are often changed into one having an offensive smell and a foreign and disagreeable taste. During the voyage these changes continue, and often increase in intensity, from the high temperature existing in the hold of the ship. Nevertheless, in spite of all the injuries which they have received, the molasses, on their arrival in this country, find a market, and by the skill of the purchaser are converted into sugar, of a quality superior to that from which they were originally obtained.

Can there be a greater proof of the ruinous management of a West India sugar estate than this fact? (In Jamaica, owing to the high price obtained for the rum, the molasses are wholly converted into that spirit, and the loss is considerably diminished in consequence; but in those colonies from which molasses are exported, the decomposition which they undergo is a serious item in the depreciation of revenue of every estate.)

Many planters assert that molasses cannot be concentrated so as to afford sugar by the plant now in use. I know not how they have arrived at such a conclusion; for in the Mauritius, where the distance from a market causes the exportation of the molasses to be an unprofitable speculation, the first and second syrups are always re-boiled, and not unfrequently the third also. The plant of that island is the same as the one in use in the West Indies.

At present the West India proprietor for the most part distils one part of his molasses, the remainder is shipped to this country or to America. If it is found more beneficial to send them to an English market than to distil them on the estate, it is evident that the profit which there attends their conversion into sugar is obtained at the expense of the proprietor, who has to submit not alone to that loss, but likewise to the one which results from their deterioration, and

this cannot be less than from ten to fifteen per cent., and probably it is much more.

There can be no doubt that the molasses ought to be converted either into rum or sugar on the spot where they are produced, and at as short a time after their separation from the sugar as possible. The first may not be a remunerative operation ; but either the second must be, or else the manufacture of sugar from cane-juice is one altogether profitless. For while the expenses attendant on the cultivation of the canes, and the concentration of the juice into sugar, are considerable, those required for the boiling of the molasses are very small indeed, the amount of evaporation necessary for their inspissation seldom exceeding twenty per cent.

Were the concentration of the green syrup or molasses generally practised, the economy that would result would not be confined to the increase in the quantity of sugar that would be obtained ; but the adoption of the plan would also admit of a considerable improvement in its quality. It is now the object of the planter to extract at one operation from the cane-juice as great a quantity of sugar as he can, the consequence is, that the point of concentration is often carried too far. This appears to have been the case whenever the method of concentrating *in vacuo* has been pursued ; and although the crystallization is in those cases generally very perfect, the separation of the molasses from the sugar is rarely found to be complete, and the value of the latter article is thereby rendered less than what it would otherwise have been.

If the conversion of the molasses into sugar be decided upon, every means ought to be adopted to perform the operation before their fermentation shall have commenced. Instead, therefore, of allowing the drainage to pass into an open cistern, the syrup should be collected in gutters, made of tin or wood, placed for the purpose underneath the crystallizing vessels, and by this means be conveyed into clean puncheons so fixed as to receive it.

At the end of the week, at the latest, the molasses should be worked off. This may easily be done ; as Saturday, a day on which no work is performed in the greater number of the colonies, may be set apart for the purpose.

Molasses, like the original syrup, may be concentrated either over the naked fire or by steam, at a high or low temperature ; and the same directions are applicable to them as were before given for the cane-syrup. We should remember, however, that the poorer the syrup the more stiffly will it require to be concentrated ; so that if the syrup which drains from the molasses-sugar be concentrated, it should be inspissated as highly as is consistent with its ultimate drainage.

The more stiffly these low syrups are concentrated, the greater will be the temperature required for curing the sugar produced from them.

After every consecutive concentration the molasses acquire an increased density. When it becomes equal to 44° Beaumé, crystallization can no longer be induced.

The drainage which comes away from the first sugar after *syruping*, should be carefully separated from the molasses themselves; it should be returned to the evaporating vessel, and there be mixed with the defecated cane-juice. The drainage from the molasses-sugars or bastards, when *syruped*, may be mixed with the first quality of the molasses, or it may be thrown into the concentrating vessel at once.

The sugar obtained from the first molasses ought always to be *liquored*, and the syrup used for the purpose should be made from the sugar obtained from the cane-juice.

Concentrated molasses are sometimes too poor to bear much stirring in the crystallizing vessel.

The time required for their crystallization is in proportion to their richness, and may vary from twenty-four hours to a week. The drainage should not be suffered to commence until the necessary quantity of grain is fully formed.

It is by producing a superior quality of molasses, that one very considerable advantage is obtained by the filtration of the evaporated cane-juice through animal charcoal. When this process has been pursued, the molasses may be concentrated without undergoing any previous treatment. When it has not been resorted to, the molasses have a darker color, and they are more viscid and tenacious; nevertheless, they may likewise be reboiled, or otherwise concentrated, at once, and the sugar produced will be of a tolerably good quality.

But in England molasses are either blown up with fine charcoal and blood, or with alumina: they are then passed through bag filters, and afterwards through deep beds of animal charcoal. In the colonies the filtration through charcoal would be far from economical, as the force of the charcoal would be expended on bleaching a liquid, a portion of which, after the extraction of a profitable quantity of sugar, is destined merely for distillation.

Dark and viscid molasses are much improved by being blown up with a little sulphate of alumina and chalk or lime, in the manner described in the chapter on Defecation. When this is performed, they should be reduced by the addition of a small quantity of water to the density of 32°, 33° Beaumé; and, after ebullition in a *copper* vessel, be passed through bag filters. This operation will not be urgently required if the molasses be submitted to concentration at as short a period as possible after their separation, and before fermentation has commenced. The results produced by it are, however, always beneficial.

When the last drainage from molasses sugar becomes at length so poor, as in the judgment of the planter to be unfit for a profitable concentration, it should be conveyed to the still-house to be converted into rum.

The number of times that the molasses may be submitted to concentration will depend upon many circumstances: in the West Indies, twice probably will be the utmost that this operation will be performed, even when the cane-juice is rich: the third runnings in

all cases will, there can be little doubt, be most advantageously used for distillation.

When the syrup shows no sign of granulating, this result may often be obtained by stirring through it a small quantity of dry sugar to form nuclei for the crystals.

For the perfect curing of sugars obtained from low syrups, the temperature of the curing-house should be at least 100°, when that point can be obtained without inconvenience; and the air should be as free from moisture as possible.

We have now gone through all the operations which collectively form the manufacture of sugar from cane-juice. It has been shown that each of them possesses an evident and distinct purpose, on the attainment of which the successful result of the whole will greatly depend. The principles on which their right performance is based have been explained, and the application of those principles has, I hope, been proved to be both easy and simple. My reward will be great, could I be assured that the reader, if he be a planter, will rise from the perusal of the foregoing pages with clearer views than he before had of the theory of his art; that he will have acquired the conviction that it possesses none of those mysterious difficulties with which his imagination has too frequently clothed it, and that he will thereby be encouraged to practice it with pleasure to himself, and with profit to his employers.

Let us again take a short and retrospective view of these operations, the better to impress upon the memory the objects which by their means we wish to obtain.

1. The canes should be cultivated with a view not merely to their size and abundance, but we should, at the same time, by every means in our power, cause them to yield a juice as rich in saccharine matter, and as free from all impurities as possible; and to prevent the evil which would result from decomposition of the juice, when cut, the canes should be conveyed to the mill without loss of time.

2. We should attempt to get from the canes the largest quantity of juice, either by improved mills, or by close attention to the fitting, bracing, feeding, &c., of those now in use; by sprinkling the megrass with water, or by exposing it to steam, and by repassing it between the rollers.

3. We must employ the best means in our power to defecate the cane-juice; that is, to make this liquid approximate as near as we can to a solution of sugar and water only. Its speedy exposure to the action of a high temperature must be effected, and the greatest caution must be practised in the administration of the "*temper-lime*."

4. The defecated liquor should be evaporated to the density of 32° Beaumé, or to any other suitable degree, with the greatest expedition; care being taken, at the same time, that the carbonization of even the smallest particle of the sugar be prevented, by constantly preserving in the pan a depth of liquor sufficient to cover that part of it which is exposed to the fire,

5. The object of filtering the liquor through animal charcoal, is the more perfect removal from it of the albuminous principles, excess of lime, coloring matter, acidity, &c.

6. That the concentration of the syrup to sugar, proof should be effected with rapidity, and at the lowest temperature possible.

7. That to promote an abundant and perfect crystallization, repose, moderate warmth, and an equable temperature are necessary; and to effect the better curing of the sugar, these two operations should be performed in the same vessel.

8. That to induce the complete separation of the molasses, the sugar, when sufficiently cured, should be submitted to the process of liquoring.

9. The molasses must be concentrated before any fermentative change shall have commenced.

Such are the objects that the planter has in view (whatever may be the means selected for obtaining them) in his efforts to extract sugar from the sugar-cane. In my humble opinion at least, a knowledge of the principles on which those operations are based will be found to benefit him far more than the supply of the most expensive machinery and apparatus, where this knowledge is wanting. It is not the instrument that makes the musician, neither does it follow that the most perfectly arranged boiling-house will produce the best sugar, where the skill which ought to direct its management is wanting.

A sugar boiler who understands his business will always be able to accommodate his means to his purposes.

A little reflection will show, that all the foregoing operations may be performed, more or less satisfactorily, in a variety of ways; that is, by keeping in view the objects sought for, the merely mechanical contrivances introduced to effect them may be modified almost infinitely. We have sufficient examples of these contrivances, in the great number of patents which, within the last few years, have been obtained in this country, and in France, for improving the manufacture of sugar, and in the various and costly machinery lately introduced into some of our own, as well as into several foreign possessions. In not any two cases, probably, is the plant exactly alike. On one estate the evaporation is performed over the fire, on another by means of steam, while in the central factory of Guadaloupe this process, as well as the subsequent one of concentration, is conducted *in vacuo*.

It must not be supposed that I undervalue the importance of those inventions; on the contrary, I consider them as improvements in the highest degree, and as such deserving the greatest commendation; but it cannot be denied that the results which have followed their precocious introduction into the colonies, have generally indicated that both proprietors and planters have commenced at the wrong end; that they have sought perfection without having previously acquired the knowledge necessary to attain it. Moreover, the vast majority of estates are so encumbered, and capitalists have yet so little confidence in the results of free negro labor, as to preclude, for

the present at least, the possibility of their possessing generally new and expensive apparatus; I must, therefore, reiterate my conviction, that the great element of success in the planter is such a knowledge of his business as will enable him to improve the circumstances which surround him.

I have already pointed out a method, unaccompanied with expense, of improving the present arrangement of the boiling-house. I shall now proceed to mention one or two others.

Let us suppose that a planter has to conduct the management of an estate, on which the boiling-house contains, for manufacturing purposes, merely five old-fashioned teachees constructed of iron; that there shall be a great deficiency of available means, and that poverty admits only of the least expensive improvement in the plant. Much even here may be done: an increase in the quantity of juice obtained from the canes, equal to from 5 to 10 per cent. over that previously expressed, will, in all probability be effected by the bestowal of a little care and attention upon the mill. The removal of the teachee, and the substitution for it of a circular flat-bottomed concentrating vessel, made of copper, and set upon a separate fire, will be required. The remaining pans will continue *in situ*, the fire being applied underneath the one which before was the second, but which in the new arrangement will be the first. A set of bag-filters, fitted as near as possible to the first pan, that is, in the place previously occupied by the teachee, completes the alterations. The cane-juice, on being received in the grand copper, is exposed to the action of heat and lime, that the separation of the nitrogenized substances may be as complete as possible. If the pans be made of iron, the defecation cannot be assisted by the addition of a little sulphate of alumina, in consequence of the action which the sulphuric acid would exert upon that metal; the hydrate of alumina produced by the decomposition of the sulphate should therefore be substituted.

The scum should be removed in the usual manner; and when the liquor in the vessel which is placed over the fire acquires the density of 32°, it should be passed into the bag-filters. After filtration the syrup is to be concentrated, and the sugar should be crystallized in boxes of a size suited to the work to be performed.

By this mode of treatment the amount of crystallized extract will be much greater, and its quality will be superior to that obtained when the ordinary method of manufacture is pursued.

Should we be desirous of effecting a still greater improvement in the quality of the sugar, a quantity of fine animal charcoal may be thrown into the liquor when duly skimmed and defecated, in the proportion of from five to six pounds of the former to one hundred gallons of the latter; and when the liquor in the first copper has acquired the density of 30°, two pounds of dried blood, previously dissolved in five or six gallons of cold liquor, are to be thrown in and briskly stirred; ebullition will recommence almost immediately, when the whole should be skipped into the bag-filters. When the pans are made of copper, the defecation may be rendered more

effectual by decomposing the sulphate of alumina while in contact with the cane-juice by the addition of lime or chalk.

To assist as much as possible the work of the filters, sieves, constructed with metallic wire, may be suspended over each copper, and the liquor in its progress forward should be caused to pass through them. The meshes of course should be as small as is compatible with the rapid transmission of the liquor.

Another modification in the arrangement of the plant consists in retaining all the coppers as they now are, but confining their use to defecation and evaporation merely. The cane-juice, after defecation and the removal of the scum, is to be evaporated to 33° , and on its attaining that density it is to be conveyed from the teache to a large clarifying vessel, made deeper than those which are usually so called, and capable of holding three or more skips. To each skip as it enters should be added a quantity of fine animal charcoal, and when the vessel is sufficiently charged, blood, either fresh or dried, must be thrown in. Heat must then be applied, and when ebullition has fairly commenced, the fire is to be damped and the liquor must be run into the filters.

If the merits of Gadesden's concentrating pan be found on experience to correspond with the reports now received respecting it, this apparatus ought to replace the open vessel, in which concentration can only be effected at a high temperature, whenever the means of the proprietor will admit.

Slight alterations in the plant, similar to the above, are, I am afraid, the only improvements that the poverty of many proprietors of sugar estates will admit of being effected in the boiling-house, at least for the present.

Were the sugar colonies in a more prosperous condition, so as to encourage the formation of new establishments for increasing the production of their staple, the following considerations should direct us in the choice of locality and the mode of erection:—1. The obtaining of a cheap motive power. 2. The easy supply of fuel other than megass. 3. The facile communication with a good shipping place. 4. The economical and effective arrangement of the plant. Let us apply these desiderata to the construction of a boiling-house capable of making 300 tons of sugar.

Of all motive powers, none can be compared with water in point of economy, nor is any more effective when the supply is permanent, abundant, and skilfully applied. Its mode of application should be that of an overshot wheel.

The mill should be of the most solid and artistic construction, and should be composed of four rollers. It ought to be sufficiently elevated to permit of a gentle descent in the passage of the cane-juice into the clarifiers. Those vessels should be three in number, and they may either be square to economize space, or altogether of the form and size of those now in use: their contents may be heated with dried cane-tops or megass, and ebullition of their contents must be induced as quickly as possible.

The clarifiers should likewise be so raised above the level of the

evaporating vessels as to permit the defecated and filtered cane-juice to run from the lower cistern of the filters directly into those vessels, without the assistance of a pump or *monte-jus*.

The evaporating vessel or vessels should be constructed on the plan of either of those recommended in the chapter on that subject; and to its discharging extremity there should be attached a cylindrical copper cistern, resting on the floor of the boiling-house, and raising to a level with the bottom of the evaporator. The cistern should be closed at top, and it should communicate with the evaporator by means of a pipe, on which is affixed a stop-cock.

In it also is to be introduced the whole of the working barrel of a small force-pump, for the purpose of raising the syrup either into the charcoal cisterns, when they are used, or into the cistern from which the concentrating vessel is to be supplied. The evaporation should be effected by coals.

The objection raised against the use of pumps is the liability to souring of the liquor induced by the decomposition of a small quantity which is absorbed by the wood, leather, and tow of the clack valve, bucket, &c. This is entirely obviated in the pump patented three or four years ago by Messrs. Palmer and Perkins, which is composed entirely of metal, the valves being merely elliptical disks of copper. These pumps also are worked with the greatest facility, the friction being reduced almost to a nullity.

For the purpose in question it is impossible to recommend this kind of pump too strongly; for by its use we have all the advantages of a hot or cold *monte-jus* in a boiling-house, where, from the absence of steam, the latter is inapplicable.

When a pump is employed to raise boiling liquids, it may perhaps be necessary to mention that the working barrel should be immersed in the fluid to be raised.

The modes of filtration through charcoal have been described.

As the employment of steam is not contemplated in a boiling-house constructed upon this plan, the choice of a vessel for concentrating the syrup is limited to one of those in which this kind of heating medium is not required.

There are few situations which possess all the above advantages for the establishment of a sugar factory: one or more of them will generally be absent. For instance: we not unfrequently see that, for the purposes of getting a good water-power, other considerations have been entirely overlooked at the time when many estates were established. This is more frequently observed in those islands which have offered great advantages in this respect. Water is an excellent and cheap power, which should always be taken advantage of when the other requisites are present at the same time; but it is one which we should not hesitate to sacrifice when they are absent.

Steam is a motive power, by the employment of which we almost always have it in our power to select a situation for the erection of sugar works which will possess all the other advantages; for which reason there can be little doubt this agent will be one hereafter most generally adopted.

When steam is the motive power employed in a sugar factory newly established, it may also be the agent selected for the production of heat, should it be thought necessary.*

* It has at all times been known to the planter that the losses sustained in one way or other in the manufacture of sugar have been considerable; but the sources of those losses, and their real amount, were, until lately, subjects on which a very general ignorance prevailed. The extensive researches which have of late been made in organic chemistry, and the application of this department of science to the manufacture of sugar, as well as to other branches of art which have required its assistance, have given us much clearer views on both these points than we formerly had; and we are now able to arrive at the most accurate conclusions respecting the amount of losses sustained, as well as furnished with the means, if we choose to avail ourselves of them, of discovering the causes which produce them.

It has been ascertained, by experiments so numerous and so varied as not to admit of a doubt respecting the accuracy of the results obtained by them, that the stem of the sugar-cane consists essentially of two elementary portions or divisions, the one being the woolly fabric or skeleton of the plant, the other the fluid contained within it; and that the relative proportions which the two bear to each other may be stated in round numbers to be ten parts in weight of the former, and ninety parts of the latter in every one hundred.

It has likewise been ascertained, that while the proportions between these two parts of the plant preserve a great degree of uniformity, there is often found a considerable difference existing in the quantities of the respective constituents of the latter or fluid portion; which constituents consist of sugar, salts, nitrogenized proximate vegetable principles, and deliquescent matter, held in solution in a large amount of water.

It has also been ascertained, that the combined quantities of all these bodies contained in a given amount of cane-juice bears a tolerable close ratio to the specific gravity of that fluid; and also, that as the proportion of the other substances is always small compared with that of the sugar, the density of the cane-juice is for all practical purposes a good indication of the amount of the latter, which it contains.

It has further been ascertained, that whatever may be the amount of saccharine matter contained in cane-juice, it is invariably of that kind known as crystallizable or cane-sugar; and that, if by the term molasses be meant a fluid containing any other variety of sugar than the above, such a substance does not exist in the cane-juice.

The molasses are always to be considered as a result of the manipulations to which the cane-juice has been submitted, so that when that liquid has been judiciously treated, the molasses which have been obtained constitute merely the mother liquor resulting from the crystallization of a portion of the sugar, they must, therefore, be composed of the other portion of the sugar, and the before-mentioned components of the cane-juice which have not been separated by defecation, in a state of solution in water; but when, on the other hand, the manufacturing processes have been improperly performed, the molasses will be found to contain other matters likewise which have been produced by changes induced in the sugar, as glucose, mannite, gum, the glucates and melasinates of lime, &c. The latter is generally the case in the common molasses of the market.

Cane-juice having a specific gravity of 1073, or 10° Beaumé, at a temperature of 60°, contains 18 per cent. of solid matter, of which 18, minus about 7-1000, is sugar. At a temperature of 80° the same amount of

sugar would be indicated by a density somewhat below the above; and it may be safely stated without exaggeration, that at the degree of heat common to tropical countries, cane-juice of this density contains fully 18 per cent. of pure sugar.

Experiments performed for the purpose have proved over and over again the truth of the above statements. They have further shown that the density of cane-juice during crop is generally higher than the one given, and that the quantity of sugar contained in that fluid not unfrequently exceeds 22 per cent. For the purpose I now have in view, however, I shall take the average density of cane-juice at 10° Beaumé, and the amount of its sugar at 18 per cent.; and as the old wine gallon is the measure still in use in the colonies, I shall retain it in the following calculations.

From the foregoing data it follows that 3000 gallons of cane-juice of the density of 10° Beaumé weighs 25,752 lbs., and that they ought to yield 4635 lbs. of dry saccharine extract. This is not to be considered merely as a theoretical formula, or as a result which can be obtained only in the laboratory of the chemist; it is one which can likewise be produced on a large scale, and in every well-arranged boiling-house. It is true, indeed, that the extract which will be produced in the latter case will not consist entirely of crystallized sugar, for the small portion which will remain when the operation is terminated, will form, in consequence of its combination with a disproportionately large quantity of saline matter, a crumbling mass, that rapidly deliquesces on exposure to the atmosphere. Nevertheless, the whole of the contained sugar will be procured. Any one may satisfy himself that this is practicable if he chooses to take the trouble. The experiment will be most conveniently performed at a low temperature, as *in vacuo*; but this plan is not essential, and sufficiently complete results may be obtained by evaporation and concentration in appropriate vessels over the naked fire and in the open air. After defecation the cane-juice is to be concentrated to the point that indicates its saturation when boiling; the syrup should remain in a state of repose until crystallization is completed. The mother liquor, when separated, should be concentrated to the same point, and the operation is to be repeated until the extract obtained will no longer crystallize; the latter must be dried at a gentle heat, and then the whole must be weighed. The amount will be equal to that indicated by the density of the cane-juice. The quantity of dry uncrystallizable extract will be found to vary at different times, owing to the purity of the cane-juice and its freedom from saline matter; but, generally, if the experiment be successfully performed, it will not exceed five parts in one hundred of the whole.

I do not mention this experiment as a system of manufacture to be followed in the boiling-house; indeed, the difficulties attending its complete performance during the height of crop would be too great, and the benefits that would be derived would not be sufficiently remunerative; I mention it only as a means by which a planter may satisfy himself that the results mentioned above are true, and that they may be obtained on a large scale were it necessary. I have produced in the way of manufacture, from cane-juice of a specific gravity of 1073, one pound four ounces of beautifully crystallized sugar, and three ounces of dry uncrystallized extract, from every wine gallon, which is rather more than 17 per cent.

If the statement made in the foregoing part of the book, that the average quantity of cane-juice expressed by the mills in the different colonies, does not exceed 50 per cent. of the weight of the canes be true, it is evident that the quantity of canes which now yield 3000 gallons of juice, contain in fact 5400, and that, *ceteris paribus*, the amount of

saccharine extract that they ought to produce should be 8343 lbs. instead of 4635 lbs.

Let it be assumed also that the weight of the *stems* of canes grown upon one acre of land is 30 tons, or 67,200 lbs., the quantity of juice (if it be of the above density) which they contain, is 7065 wine gallons, or 60,480 lbs.; and the amount of saccharine extract 10,886 lbs., or four 86-100 tons.

I do not suppose that by any method yet known this result could be obtained on a large scale, and in the way of manufacture; I give the calculation only as a standard whereby we may compare the one at present produced, and thus be able to see the losses sustained. The portion of the loss alone which is not remediable by care and good management is the one that depends upon our imperfect means of expressing the juice. But who is hardy enough to say that such will always be the case? Can no means be invented by which the loss that arises from this cause may be prevented? We should possess a remedy at once, were it satisfactorily proved that the process of M. Michiel could perform what it promises.

I have stated that by paying attention to the mill, the quantity of cane-juice may be increased from 50, the present amount, to 70 per cent.; in which case the juice produced from 30 tons of canes would be 47,040 lbs., and the amount of dry saccharine extract 8467 lbs., or three 78-100 tons; which, when the cane-juice has a density of 10°, is the one which can always be obtained by the means we now possess.

When we extend our inquiries into the results actually obtained in the colonies, such difficulties present themselves, owing to the want of data, as to prevent our forming an opinion with anything approaching to accuracy. We know indeed that a considerable loss is sustained in every case; we know, in a great measure, the causes on which the loss depends; but of the proportionate extent in which each cause separately acts in the production of the entire loss we are wholly ignorant. So unsatisfactory is our knowledge respecting colonial statistics, that the only conclusions that can be arrived at of the capabilities of a sugar estate, or the work performed upon it, are those which are founded upon the gross amount of its produce; and this, set against its current expenses, shows the profit or loss for the year—the only question of this kind which has yet been solved.

We will, however, apply the little knowledge we possess on this truly important subject to two widely different and extreme cases.

Accounts recently received from British Guiana state, that at the beginning of the present crop, 3000 gallons of cane-juice were required to make a hogshead of sugar. The hogshead, on its arrival in England, weighed 15 cwt., or 1680 lbs. nett. It is probable, but not stated, that the quantity of molasses drained from the sugar was about 12 cwt., which—33 per cent. of water contained—gives 900 lbs. as their weight when dry; consequently the entire amount of dry saccharine extract available for the market was 2580 lbs. Let us suppose that the quantity of juice expressed was, as in the former cases, 50 per cent., and that an acre of land yielded 30 tons of canes, the quantity of juice obtained from them, therefore, would be 33,600 lbs., and that of dry extract could not exceed 3500 lbs.

In Barbadoes it is not uncommon to see an acre of canes produce three hogsheads of sugar of 15 cwt. nett, and a proportionate quantity of molasses. We will again suppose, in this case as in the others, that the weight of the canes was 30 tons, and the yield of the juice 50 per cent., the quantity of juice would be 33,600 lbs.; which gave 5040 lbs. of sugar, and three puncheons of molasses—33-100 water=2240 lbs. dry molasses; or a total of 7280 lbs. of dry saccharine extract.

The following table will enable us to compare, at one view, these different results:—No. 1 gives the products of 30 tons of canes, presuming the density of the cane-juice to be 10°; that the whole of it has been expressed, and that the manufacture has been judiciously conducted. No. 2 gives the products of an equal weight of canes: the density of the cane-juice 10°, the quantity expressed 70 per cent., and the manufacture properly performed. No. 3 shows the products presumed to have been obtained in British Guiana at the commencement of the present crop from a similar weight of canes; and No. 4 shows the products obtained from an acre of canes in Barbadoes, the weight of which is likewise presumed to be 30 tons:—

	Weight of Canes.	Weight of Juice.	Weight of Extract.	Amount of Ex- tract per 100 lbs. of Juice.	Amount of Ex- tract per 100 lbs. of Canes.
1.....	30 tons.....	60,480 lbs.....	10,886 lbs.....	18.....	16.20
2.....	30 tons.....	47,040 lbs.....	8,467 lbs.....	18.....	12.6
3.....	30 tons.....	33,600 lbs.....	3,500 lbs.....	10.....	5
4.....	30 tons.....	38,600 lbs.....	7,280 lbs.....	21.6.....	10.8

Although the data which have formed the basis for the calculations in the two last lines of the table are as incomplete as they well can be, yet if we confine ourselves simply to the inspection of the different amounts obtained of saleable extract, and of these at least we have sufficient evidence, we cannot but express our astonishment.

The great excess in products which the Barbadoes estate shows over the one in British Guiana cannot, I think it will be admitted, be attributed to any superiority that the old-fashioned vertical wind-mill in use in the former colony has over the well constructed steam-mill of the latter; neither can it be attributed to the greater weight of the canes, for it is not probable, if we are to judge from their size, that the weight of the canes taken from an acre of land in Barbadoes exceeds 30 tons. It cannot be accounted for by the presumption that the Barbadoes sugar-boiler surpasses in skill his brethren of Guiana; for if this were the case, and there is no reason for supposing so, the quality rather than the quantity of sugar would be affected, as in both colonies the same system of manufacture is in force. It may be that many causes which we, from want of accurate information, may not be able duly to appreciate, have been in operation perhaps in both instances, tending either towards good or towards evil in the results produced by them; and we are compelled to believe that the predominant one will be found in the cane-juice—in its richness in the one case, in its poverty in the other. If this cause be a true one, the specific gravity of the cane-juice of the Barbadoes estate must have been as high as 1090—1095, or 12° to 13° Beaume; while in that of Guiana it could not have exceeded 1040, or 5° to 6° Beaume.

It therefore follows that in the latter case, presuming the above supposition correct, the cause of loss would be attributable to the injudicious custom, which, unfortunately, too generally obtains throughout the West India colonies, of cutting the canes without regard to their fitness for the purposes for which they are destined.

It has been explained, I trust in a sufficiently intelligible manner, that during the rapid vegetation of the cane, the saccharine matter is re-absorbed from the cells almost as rapidly as it is deposited in them, and is employed for the purposes of nourishing the plant, and affording materials for the formation of its new parts. To cut the canes when in such a condition indicates either ignorance or carelessness on the part of the person so doing, for the result must necessarily be extremely prejudicial, if we regard it only in the light of an economical management of the property. It is evident that under such circumstances the extract obtained may be

furnished one half, while the evaporation required, and consequently the quantity of fuel, will be in like proportion increased. For instance, let it be supposed that the cane-juice is so rich in its saccharine constituents as to produce 1500 lbs. of crystalline extract, and 500 lbs. of molasses from 1000 gallons, the amount of evaporation to be effected would be about 800 gallons. Whereas, were the cane-juice of a quality similar to that described in the Guiana estate, that is, were it so poor as to yield only the above amount of extract from 3000 gallons, the evaporation demanded must be equal to 2800 gallons, and the quantity of fuel necessary to effect it must be $3\frac{1}{2}$ times greater than in the former case. But the money loss sustained would not be confined to the deficiency of extract obtained, or its inferiority in quality; but it would extend through all the operations of cultivation likewise.

Another source of loss, and one which has been ascertained with tolerable accuracy, although I believe that it has been on the whole undervalued, is that which results from the leakage of the sugar on shipboard. It would appear from the evidence which we possess respecting it, to vary from 10 to 15 per cent., the average being about 12 $\frac{1}{2}$ per cent.—in money-value, equal to the price of the freight. The loss thus arising is owing to the deliquescent nature of the sugar itself, which depends partly upon the retention of a small quantity of saline matter, partly upon unskilful manufacture, but generally upon the simultaneous action of both causes.

The other causes of loss sustained by the greater number of sugar plantations which have hitherto been ascertained, I have already alluded to; a recapitulation of the whole may, however, be useful. 1. Injudicious cultivation of the canes; 2. the commencement and continuation of the crop when the canes are unsuited to the purposes of manufacture; 3. the imperfect expression of the juice; 4. unskilful manufacture; 5. leakage on shipboard.

The loss produced by each of these causes respectively no doubt varies in every instance, and we have no means by which we can ascertain its amount with accuracy; but the average loss which arises from the action of them all conjointly, may without exaggeration be calculated at cent. per cent.; it is often, indeed, as the preceding table shows, very much more.

The causes, it is true, are in general operation throughout all the sugar-growing countries, and therefore the depressed condition of our colonies cannot be attributed exclusively to their existence. But a due consideration of them would suggest the means of counteracting many of the difficulties incident to the present transition state of West India property.

The first step to be taken for the remedying of an evil, is a close investigation of it, so that we may thereby arrive at a knowledge of its nature. How little in this respect has hitherto been done! It is a subject of such vast importance to the well-doing of our sugar-producing colonies, that every available means should be adopted, with as little delay as possible, for throwing upon it the fullest and clearest light. Every estate should possess a book in which should be inserted the chemical character of the soil, the mode of cultivation pursued, the nature and quantity of manure employed, the weight of canes produced per acre, their description, whether plants, ratoon, &c., the quantity of juice expressed by the mill, the density of that fluid and its other peculiarities, if it have any, the amount of sugar and molasses obtained, &c. &c.

I do not suppose that such a measure could be carried out at once—it ought, however, to be commenced immediately, although it be but partially so; neither do I suppose that the whole of the canes are to be weighed as they come to the mill, and the whole of their juice to be

measured; but I mean that samples taken from the different cane fields should be submitted to these trials as frequently as circumstances will permit, so that both the manager and the proprietor may be possessed of information approaching to accuracy respecting matters in which they are so deeply concerned, and in the knowledge of which they are at present lamentably deficient.

The colonial planter will probably answer this proposal by a statement that the labor which he has at his command is inadequate to the calls at present made upon it. He may, moreover, in answer to an appeal made to him with a view to encourage any attempt at the amelioration of his art, (if it is to be accompanied by the sinking of additional capital, however small,) say, that in the state in which he finds himself he can scarcely pay the current expenses of his property, and that until he can feel assured of sufficient labor for every purpose of his cultivation and manufacture on reasonable terms, he can neither have courage, nor inspire those who have the ability to assist him with confidence, to undertake the outlay of capital which, like much of that which is already invested, may prove fruitless.

Without questioning the justness of these views, for it is evident that confidence in the result must be the basis of every investment of capital, it may yet be doubted whether, on the one hand, too much stress has not sometimes been laid upon the admitted deficiency of labor, and on the other, too little consideration has been given to the possibility of finding a remedy in the adoption of better modes of culture, and of improvements in the manufacture of sugar, which are demonstrated to be attainable. There is at least a great variety in the circumstances of the several colonies. In most of them it is perfectly practicable to supersede manual labor to a great extent by the use of the plough and other implements employed in Europe. This change has indeed already made considerable progress; but any hesitation or delay in adopting so obvious a means of economy is quite inexcusable. Wherever this substitution can be effected, and it is nevertheless neglected, there can of course be no ground on which to rest any argument from a deficiency of labor. In some of the colonies, however, it is not everywhere practicable; and one of the most important—British Guiana—is, from the nature of the country, at present wholly dependent upon manual labor.

Of all the West India colonies, the last mentioned has probably been the most forward in pursuing judicious attempts at improvement. A gentleman of the highest scientific attainments has been engaged as agricultural chemist. His first report on thorough drainage has just reached this country, which, for the mass of valuable information contained in it, is alike creditable to the perseverance and talents of the author and the good sense of the inhabitants. Therein is shown the injurious results produced in the staple manufacture, owing to the imperfect system of drainage at present pursued—the impossibility of using the plough or horse-hoc in the cultivation of the soil, the loss in the quantity of sugar obtained, estimated at one ton per acre, and its inferiority in quality, owing to the superabundance of salt in the soil. A small patch of land has been appropriated by the colony for testing the improved results expected to be effected by the system of covered drains, “but no idea is or can be entertained by individual proprietors of introducing it on their estates, owing to its great expense, solely caused by the present price of labor.

Other examples might be given to illustrate the urgent necessity of an adequate supply of labor, and the impossibility of effecting even the most elementary and essential improvements without its aid. But it is presumed that, while undue importance need not be ascribed to the introduc-

tion of laborers as affording the only means of relief, no doubt can be entertained that it is highly expedient to encourage a steady and constant flow of immigration as being eminently calculated to promote the prosperity of the colonies, and prove beneficial to all parties.*

* Dr. Evans devotes the few remaining pages of his work entirely to the West India question, which is not so important to our readers, as we have already published much matter of the kind. In our next, however, we will notice these pages.—EDITOR.

AMERICAN CITIES.

1.—MOBILE.

Among the most flourishing of southern ports, is the city of Mobile, and it is gratifying to observe, that, notwithstanding the ruinous laws of the last year to shippers of produce, the aggregate value of exports from Mobile has been more than last year, as follows:

EXPORTS OF MOBILE, YEAR ENDING JUNE 30, 1848.

	1847		1848		Total
	3d qr.	4th qr.	1st qr.	2nd qr.	fiscal year.
In American vessels.....	1,744,724	1,020,781	2,627,576	2,247,613	7,640,694
In foreign vessels.....	116,077	150,488	2,507,713	1,510,775	4,287,053
Total.....	1,860,801	1,171,269	5,137,289	3,758,388	11,927,747

As compared with former years, the results are as follows:

	1842.	1845.	1846.	1847.	1848.
In American vessels.....	5,937,570	6,615,568	3,159,550	3,197,209	7,640,694
In foreign vessels.....	4,028,105	3,699,706	2,100,767	5,857,371	4,287,053
Total.....	9,965,671	10,315,274	5,260,317	9,054,580	11,927,747

This is a gratifying result, as far as aggregate value goes. Of course, the exports are composed almost altogether of cotton, and in spite of the low prices, the value has been comparative in quantity as follows:

EXPORTS OF COTTON TO FOREIGN PORTS FROM MOBILE FOR THE TWO YEARS

Ended 31st Aug., 1848. Ended 31st Aug., 1847.

Where exported.	Bales.	Pounds.	Value.	Bales.	Pounds.	Value.
To Gt. Brit'n, in Am. ships.....	115,834	58,432,641	\$3,762,535 69	30,931	15,038,126	\$1,525,096 16
do British ships.....	112,345	56,443,576	3,783,344 89	98,779	48,132,870	5,075,779 71
Total to Gt. Britain.....	228,179	114,876,216	\$7,545,680 58	429,710	63,170,996	\$6,600,875 87
To France, in Am. ships.....	57,682	29,064,030	2,047,731 87	36,294	16,675,048	1,857,637 84
do in French ships.....	4,150	2,110,906	151,147 47	2,999	1,475,640	147,984 84
Total to France.....	61,832	31,174,934	\$2,198,879 34	39,293	18,150,688	\$2,005,622 68
To Spain, in Am. ships*.....	1,590	755,484	54,473 09	—	—	—
do in Spanish ships.....	5,409	2,496,631	188,089 79	7,836	3,437,330	364,320 70
Total to Spain.....	6,929	3,252,115	\$242,562 88	7,836	3,437,330	\$364,320 70
To Holland.....	636	323,758	17,528 67	—	—	—
To Belgium.....	7,702	3,870,258	274,912 94	—	—	—
To Hamburg.....	5,102	2,587,538	181,141 06	5,293	2,597,896	265,753 10
To Sardinia.....	4,932	2,480,328	150,109 71	—	—	—
To Austria.....	1,056	524,436	35,899 71	4,036	2,090,596	209,116 00
To Bremen.....	2,723	1,371,360	93,448 93	4,053	1,997,642	203,448 50
Total to other foreign ports.....	22,141	11,157,678	\$753,041 02	13,362	6,596,134	\$678,317 00
Grand Total.....	309,081	160,458,894	\$10,740,363 82	190,221	91,355,146	\$9,640,036 25

* Including 1,445 bales shipped to Cuba.

The import of foreign merchandise to Mobile, for the six months ending with June, were as follows:

IMPORT INTO MOBILE.

	First qr.		Second qr.		Total	Duties.
	Am. vess.	For. vess.	Am. vess.	For. vess.		
1847	89,339	6,042	15,341	27,510	138,281	36,190
1848	41,811	50,155	16,825	9,703	118,494	31,563

LUMBER.—The trade in lumber is increasing every year—and although our tabular statements furnish a faithful account of all that has been reported at the Custom House, we are convinced they do not embrace more than a moiety of what has left our bay within the last year. Several of the mills on the borders of our navigable streams have contracts for furnishing lumber with New-Orleans and elsewhere, which keep vessels in constant employment in its transportation, and of which we have no regular account. A number of ships have been freighted for Havre, Barcelona, etc., with spars and timber suited to naval purposes, but we have no accurate means of estimating the value of these exports. The trade in lumber is valuable, and from the extent of our forests is capable of almost an indefinite extension. Exports of sawed lumber, agreeably to the tables kept, amount to 7,619,093 feet—previous year, 5,734,134 feet; staves, 562,200; cedar logs, 1,602; timber, pieces, 4,511; spars, 977; masts, 353; deck-plank, 7,228; oars, 5,828; handspikes, 10,596; shingles, 581,388; laths, 122,000.

MISCELLANEOUS.—The exports of corn and flour—considerable quantities of which were shipped hence last year—have been to but a very limited extent the present season. 5,113 sacks of corn, and 678 bbls. flour, is all of which we have any account. Some small quantities may have gone coastwise. There have been shipped for export, 331 bales, and 8,527 loose hides; 1,051 bales rope cuttings; 3 blds., 85 casks, and 217 bbls. tallow; 35 bales deer skins; 11 bales wool; 6,300 cow horns; 4 casks, 1 tierce and 16 bbls. beeswax; 281 boxes tobacco; 81 blds and 66 tierces sugar; 147 bbls. tar, (a new article of export;) 210 bbls. potatoes.

2.—MEMPHIS, TENN.

BUSINESS STATISTICS—COMPRISING THE DIFFERENT DESCRIPTIONS OF BUSINESS IN MEMPHIS.

	Capital subject to taxation.
39 Dry Goods Stores.....	\$466,500
42 Grocery and Produce stores.....	145,000
7 Clothing stores.....	48,000
10 Drug stores.....	50,000
8 Hardware and Cutlery stores.....	65,000
2 Shoe stores.....	20,000
1 Hat store.....	3,000
3 Book stores.....	20,000
3 Jewelry stores.....	20,000
1 Queensware store.....	5,000
2 Cigar and Variety stores.....	6,000
5 Carriage stores.....	25,000
5 Wholesale Liquor stores.....	21,000
4 Furniture stores.....	23,000
2 Confectionary stores.....	6,000
1 Music store.....	5,000
8 Dry Goods and Commission Houses, say.....	300,000
19 Grocery " ".....	500,000
	800,000
	\$1,718,500
4 Auction and Commission Houses, city tax.....	\$200
2 General Agents, city tax.....	30
4 Brokers and Exchange dealers.....	500
14 Pealers, city tax.....	120
40 Retailers of Liquors, city tax.....	250
8 Livery Stables, city tax.....	250
109 Drays and Carts, city tax.....	100

3.—CHARLESTON.

The following are the tax returns for 1847—1848:

Real estate for 1847.....	\$10,472,361	a 50.....	\$52,396 80
do do do for 1846-47.....	12,055,237	a 15.....	18,127 85
Stock in railroads.....	3,425,000	a 1 p. c.....	34 26
Income.....	763,690	a 50.....	3,818 44
Income on exchange.....	48,588	a 60.....	2,915 93
Assets under twelve years.....	9,012	a \$21.....	22,530 00
Assets under twelve years.....	2,924	a \$11.....	3,635 00
Assets under twelve years.....	1	a \$3.....	3 00
Assets under twelve years.....	156,200	a \$71.....	6,78 25
Assets.....	143	a \$25.....	3,575 00
Assets.....	45	a \$121.....	562 00
Assets.....	157	a \$15.....	2,355 00
Assets.....	12	a \$74.....	90 00
Assets.....	20	a \$10.....	200 00
Assets.....	598	a \$5.....	2,990 00
Assets.....	124	a \$21.....	310 00
Assets.....	5,264	a 1 p. c.....	52 64
Assets.....	472	a \$3.....	1,416 00
Assets.....	43	a \$3.....	129 00
Assets.....	358	a \$5.....	1,790 00
Assets.....	56	a \$5.....	280 00
Assets.....	208	a \$10.....	2,080 00

\$117,387 67

Increase in 1848..... 693 85

\$118,081 52

Real estate for 1848.....	\$10,534,198	a 45.....	\$47,403 86
do do do for 1846-47.....	320,000	a 50.....	160 00
do do do for 1846-47.....	1,803,526	a 15.....	2,705 23
do do do for 1846-47.....	2,848,916	a 57.....	15,661 04
do do do for 1846-47.....	2,275	a 1 p. c.....	22 75
do do do for 1846-47.....	724,470	a 60.....	4,376 82
do do do for 1846-47.....	323,788	a 1 p. c.....	3,237 88
do do do for 1846-47.....	93,229	a 60.....	559 37
do do do for 1846-47.....	11,852	a \$21.....	26,667 00
do do do for 1846-47.....	16	a \$3.....	43 00
do do do for 1846-47.....	198,165	a \$71.....	743 11
do do do for 1846-47.....	81,661	a 60.....	4-9 96
do do do for 1846-47.....	110	a \$25.....	3,500 00
do do do for 1846-47.....	42	a \$121.....	525 00
do do do for 1846-47.....	162	a \$15.....	2,430 00
do do do for 1846-47.....	18	a \$74.....	135 00
do do do for 1846-47.....	16	a \$10.....	160 00
do do do for 1846-47.....	1	a \$5.....	5 00
do do do for 1846-47.....	606	a \$5.....	3,030 00
do do do for 1846-47.....	115	a \$21.....	287 50
do do do for 1846-47.....	477	a \$3.....	1,431 00
do do do for 1846-47.....	45	a \$3.....	135 00
do do do for 1846-47.....	366	a \$5.....	1,830 00
do do do for 1846-47.....	61	a \$5.....	320 00
do do do for 1846-47.....	221	a \$10.....	2,210 00

\$118,081 52

Increase in 1848..... 693 85

4.—IMPORTS INTO ST. LOUIS.

The following comparative table, showing the receipts of the principal articles of commerce, at the landing in this city, from the 1st of January to the 31st of December, for the years 1846, 1847, and 1848, which we make up from the best sources, we believe to be as nearly correct as can be arrived at. In the case of the receipts of produce from points above for New-Orleans, we have not included any that is brought in by wagons; consequently, it does not include all that is brought into our market. Had we any

means of ascertaining, with any degree of accuracy, the amount of export from this city, it would exhibit a much larger amount, and more satisfactory evidence of the extent of our trade.—[*Western Journal*.]

	1848.	1847.	1846.
Tobacco, hhds.	4,701	3,460	5,338
Hemp, bales.	24,831	59,647	21,282
Lead, pigs.	338,618	358,528	420,352
Flour, barrels.	150,979	235,374	113,316
Wheat, bushels.	938,252	1,644,429	1,200,871
Corn, bushels.	240,028	844,673	427,259
Oats, bushels.	161,010	162,665	—
Rye, bushels.	3,840	2,212	3,247
Barley, bushels.	65,036	28,198	13,641
Beans, barrels.	2,340	3,200	2,283
Sacks.	1,267	2,382	700
Flaxseed, bbls.	6,416	3,555	1,790
Fruit,* bbls.	5,697	7,550	3,374
Sacks.	2,960	8,361	1,088
Potatoes, bbls.	900	1,820	2,733
Sacks.	47,420	19,330	19,906
Pork, bbls.	68,455	35,992	43,621
Half bbls.	943	250	39
Beef, tierces.	3,415	1,162	—
Bbls.	2,295	2,388	12,208
Half bbls.	—	192	126
Bacon,† casks and tierces.	26,505	11,450	9,059
Bbls and boxes.	4,481	1,090	457
Bulk meat,† lbs.	6,625,244	2,522,418	700,430
Lard, tierces.	3,482	—	—
Bbls.	70,912	28,293	23,537
Kegs.	9,544	7,175	12,289
Butter, bbls.	666	610	547
Kegs, firkins, &c.	1,946	1,290	1,565
Cheese, casks.	22	53	270
Boxes.	3,142	2,379	5,463
Tallow, tierces and casks.	121	40	105
Bbls.	287	171	916
Beeswax, bbls.	325	315	338
Packages.	382	460	374
Beef hides.	40,443	42,836	50,267
Whiskey, bbls.	17,065	13,638	15,705
Sugar, hhds.	17,500	8,136	8,042
Bbls and boxes.	5,784	11,517	2,493
Molasses, hhds. and tierces.	153	368	—
Bbls.	19,215	4,707	8,580
Coffee, bags.	33,556	30,296	42,913
Salt,‡ sacks and bags.	118,472	58,150	70,682
Bbls.	14,379	11,602	35,135

* Including green and dried apples and dried peaches.

† Including bacon and pork in salt.

‡ Including Liverpool, Turk's Island, Cadiz, &c.

5.—CINCINNATI.

The progress and present condition of the Queen City of the West, are thus briefly stated in a letter to the N. Y. Evening Post:

"Cincinnati is situated on the Ohio, 494 miles from its mouth, and 455 miles from Pittsburg. It extends three miles along the river, and two back from the water. The city is regularly laid out. Many of the streets are adorned by fine edifices, and shaded by beautiful trees. The population of Cincinnati in 1820 was 10,000; in 1830, 24,831; in 1840, 46,338; and at the present time it is more than 100,000. The city contains 72 Churches, an Astronomical Observatory, 3 Colleges, 4 Medical Schools, 1 Law School, and numerous Female Seminaries and Classical Schools. 13 daily, 25 weekly, and 4 monthly periodicals are published here. There are in Cincinnati several extensive Foundries, numerous Cotton and Woollen Factories, and manufactories of almost every kind. But the va-

business in which Cincinnati excels every other place is Pork-pecking: 457,049 hogs were packed here during the last year—412,000 of which were killed in the city. Supposing their average weight was 200 lbs., their total weight would be nearly 100,000,000 lbs., which, if equally distributed, would give every man, woman, and child in the United States, each five pounds of pork. Just back of the city lies a range of hills, which are crowned by two beautiful villages, Mount Auburn, and Walnut Hills. Being about 200 or 300 feet above Cincinnati, the situation of these villages is exceedingly beautiful. They overlook the city, and the river for several miles above and below Cincinnati, and Newport and Covington on the opposite shore, in Kentucky. Walnut Hills is the seat of a flourishing Theological Seminary of the New School Presbyterian Church, the President of which is the venerable Lyman Beecher, D. D. Mount Auburn is principally composed of the residences of men doing business in the city. The cottages and dwellings in this village are, many of them, very elegant buildings. The grounds about them are highly adorned, though there is very little of shrubbery that is merely ornamental. The useful and the beautiful are combined in the pear, the peach, the plum, the apple, and the vine."

COMMERCE OF CINCINNATI.

The following is an exhibit of the Imports and Exports of leading articles into and from Cincinnati in the last and previous year, ending August 31.

IMPORTS.			EXPORTS.		
	1847-8.	1847-6.		1847-8.	1847-6.
Corn, bush.....	361,315	896,258	Beef, brls.....	14,811	10,367
Corn meal, bush.....	29,542	56,775	Beef, tierces.....	3,615	7,990
Cheese, casks.....	164	483	Butter, brls.....	2,937	1,348
Cheese, boxes.....	138,800	120,301	Butter, kgs.....	28,315	31,194
Cotton, bales.....	13,476	12,528	Corn, sacks.....	53,021	258,198
Coffee, sks.....	80,242	59,339	Corn meal, brls.....	19,999	88,882
Flour, brls.....	151,518	515,506	Cheese, bxs.....	59,379	70,104
Lard, brls.....	37,978	21,991	Cotton, bales.....	6,123	5,019
Lard, kgs.....	41,714	22,722	Coffee, sks.....	18,587	13,037
Molasses, brls.....	51,001	27,216	Flour, brls.....	201,012	581,920
Oats, bush.....	194,557	372,427	Lard, brls.....	81,679	49,878
Pork and bacon, hhds.....	4,420	5,476	Lard, kgs.....	208,606	150,823
Pork, tcs.....	140	124	Oats, sacks.....	41,675	140,067
Pork, brls.....	69,828	40,581	Pork and bacon, hhds.....	37,162	31,528
Pork, in bulk, lbs.....	9,643,063	8,027,399	Pork and bacon, tierces.....	8,862	7,894
Sugar, hhds.....	27,153	16,649	Pork and bacon.....	186,886	137,218
Sugar, brls.....	11,175	7,196	Pork, bulk, pounds.....	4,759,188	3,478,856
Sugar, boxes.....	2,928	5,179	Sugar, hogsheads.....	11,559	4,998
Wheat, bush.....	670,813	590,809	Tallow, barrels.....	5,689	4,543
Whiskey, brls.....	170,436	184,639	Whiskey, barrels.....	186,509	183,928

6.—FIRST RECEIPTS OF COTTON AT NEW-ORLEANS.

The *Concordia Intelligencer* furnishes the following. We beg the able editor not to suppose for an instant that our neglecting to credit Col. Clairborne's statistics of the War Department was intentional. Our regards for the *Intelligencer* are of too high a nature.

1823.....Sept. 20.....	4 bales.	1836.....Aug. 24.....	1 bales.
1824.....July 30.....	1	1837....." 20.....	1
1825.....Aug. 28.....	10	1838....." 26.....	1
1826.....Aug. 15.....	17	1839....." 5.....	5
1827.....Sept. 15.....	33	1840....." 9.....	1
1828....." 7.....	6	1841.....July 31.....	1 or more.
1829....." 19.....	2	1842....." 25.....	1
1830....." 18.....	13	1843.....Aug. 17.....	1
1831....." 10.....	4	1844.....July 23.....	4
1832.....Aug. 18.....	3	1845....." 30.....	1
1833....." 24.....	1	1846.....Aug. 7.....	7
1834....." 28.....	28	1847....." 9.....	2
1835....." 29.....	1	1848....." 5.....	1

7.—NEW-ORLEANS VITAL STATISTICS.

Our friend, Dr. Fenner, of this city, who has been preparing some able and most laborious articles for the *Medical Journal* upon Yellow Fever, furnishes the following statistics. They are taken from the books of the Charity Hospital, which he considers "the most extensive fever hospital in the world."

ADMISSION IN THE CHARITY HOSPITAL.

1841.	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Total.
Intermittent Fever,....	3	27	35	39	23	65	187	151	18	66	93	72	794
Yellow Fever,.....	—	—	—	—	—	—	—	174	642	252	37	8	1113
1842.													
Intermittent Fever,....	45	29	35	39	45	124	160	169	144	140	110	61	1092
Remittent Fever,.....	4	—	1	3	4	8	12	34	41	35	11	3	155
Yellow Fever,.....	—	—	1	—	—	—	47	247	93	23	—	—	410
1843.													
Intermittent Fever,....	31	30	35	31	19	40	70	98	128	136	149	76	843
Remittent Fever,.....	1	—	—	1	—	9	40	75	49	12	8	10	205
Yellow Fever,.....	—	—	—	—	—	—	23	188	365	351	111	15	1053
1844.													
Intermittent Fever,....	66	49	41	32	44	75	176	258	255	261	216	116	1589
Remittent Fever,.....	2	4	2	1	4	24	30	47	67	55	5	3	244
Yellow Fever,.....	2	2	—	—	—	1	1	1	68	52	25	—	152
1845.													
Intermittent Fever,....	7	75	57	44	79	112	145	96	279	196	189	124	1403
Remittent Fever,.....	2	1	—	1	11	17	38	34	33	17	—	—	154
Typhoid Fever,.....	7	6	5	2	10	8	11	14	18	20	15	23	139
Yellow Fever,.....	1	—	—	—	—	—	—	—	—	—	—	—	1
1846.													
Intermittent Fever,....	79	58	75	76	85	138	214	227	359	376	310	81	2078
Remittent Fever,.....	3	3	5	—	7	6	2	9	22	36	7	3	103
Typhoid Fever,.....	30	13	7	5	10	12	14	17	5	7	23	52	196
Yellow Fever,.....	—	—	—	—	—	—	—	—	29	83	32	4	148
1847.													
Intermittent Fever,....	144	117	98	153	140	211	223	74	53	258	380	341	2192
Remittent Fever,.....	4	1	4	9	17	38	69	64	25	12	18	8	269
Typhus and Typhoid,...	40	23	54	180	231	359	64	3	1	10	160	347	1502
Yellow Fever,.....	—	—	—	—	—	5	148	1611	777	219	49	2	2811

Whole number of diseases admitted into the Hospital, 1841, 4380; of fevers, 1991. 1842, 4404; of fevers, 1758. 1843, 5013, 2222. 1844, 5846, 2207. 1845, 6136, 1763. 1846, 8044, 2603. 1847, 11,890, 6901 fevers.

COMMERCE OF AMERICAN CITIES.

I.—NEW-ORLEANS.

At the close of another commercial year we proceed to digest, from all the sources within our reach, the commercial results presented by New-Orleans for 1847-48. We shall still find much for proud gratulation.

The following tables are from the admirable publication of the *Prices Current* :—

[illegible]

Articles.	1847-8.	1846-7.	1845-6.	1844-5.	1843-4.	1842-3.	1841-2.	1840-1.	1839-40.	1838-9.
Hides.....	47662	98342	112913	117863	76490	45957	26169	25522	29962	19582
Horns.....	12500	9600	700	8300	3870	1700	700	2480	18686	27450
Hay.....	61934	95231	71270	37296	35132	28039	20166	21425	7603	9915
Iron, Pig.....	701	1151	1083	207	100	211	322	512	1001	411
Lard.....	439	143	45	167	212	1433	74	74	146	313
Lard.....	316031	117077	107639	60078	119717	104540	18207	9672	5007	8620
Lard.....	303661	275076	334069	245414	378341	307871	366694	311710	177303	218387
Lime, western.....	14920	5994	8387	6233	3767	1159	830	2406	1020	900
Lead.....	606966	650129	785394	732125	639269	571949	472556	434467	307397	309528
Lead, bar.....	787	1291	1431	788	851	701	1014	601	863	807
Lead, white.....	9203	11686	7833	888	30	50	593	.....	.....	.....
Molasses.....	159460	91710	122363	105086	64852	66183	69104	.....	.....	.....
Oats.....	467217	588337	269386	144292	130432	120430	63281	54250	42883	38708
Onions.....	7960	7185	6979	7499	6443	4614	7499	6457	2371	441
Oil, linseed.....	2237	3637	1135	1356	2260	1356	303	414	195	180
Oil, castor.....	1199	1439	2379	3385	2737	4976	3686	1115	669	357
Oil, lard.....	5401	2573	2606	2413	2647	1813	.....	.....	.....	.....
Peach Brandy.....	4	72	54	46	49	72	267	147	9	51
Pickles.....	505	648	1316	218	1154	445	140	157	427	611
Potatoes.....	151861	142988	107058	53779	56587	47060	26201	28468	21469	6254
Pork.....	36480	302170	369601	216960	412928	204643	244442	216974	120908	166071
Pork.....	14201	9452	9988	6741	8800	2371	946	763	1067	1160
Pork, in bulk.....	1356430	8450700	9740752	4079600	7792000	6814750	4051800	9744250	5099987	7192156
Porter and Ale.....	3492	1363	231	86	604	1050	514	2133	106	324
Packing Yarn.....	3333	2193	1180	1104	1164	1465	2099	509	842	1040
Skins, Deer.....	1784	4364	4364	2729	1939	1496	3219	1630	2200	3183
Shot.....	5558	3992	3103	4105	4714	1588	3416	6501	1442	1345
Sugar.....	128112	82011	93109	93288	51816	65036	50920	.....	.....	.....
Snap.....	60000	4361	3633	6076	7399	2627	1932	150	66	300
Shingles.....	60000	147000	13000	144000	361561	147000	114000	155000	537000	80000
Staves.....	2000000	2000000	5679000	2500000	1362678	1165400	425000	736600	1000000	1700000
Tallow.....	4357	6658	8255	7428	7293	6995	5071	937	200	748
Tobacco, leaf.....	55882	55588	72896	71493	82435	92509	67555	53170	43827	28153
Tobacco, chew.....	6390	3930	3040	5309	7695	4902	3618	3935	912	1856
Tobacco.....	118	1001	1105	3799	4771	3008	3298	1236	280	1386
Wine.....	2264	1285	734	1951	2099	1903	1175	1009	993	912
Whiskey.....	135333	126553	117104	97651	86947	83597	63345	73873	55857	29353
Window Glass.....	4260	3805	2871	3071	2066	2342	2761	760	2363	2732
Wheat, bbls and sacks	149181	833649	403786	64759	86014	118248	134886	2621	63015	17280

COMMERCE, OF AMERICAN CITIES.

VALUE OF PRODUCE OF THE INTERIOR.

A TABLE showing the receipts of the principal articles from the interior, during the year ending 31st August, 1848, with their estimated average and total value.

Articles.	Amount.	Average.	Value.	Articles.	Amount.	Average.	Value.
Apples.....bbls	39,518	\$3 00	\$118,554	Lead, bar. .kegs and boxes	787	16 00	\$ 12,282
Bacon, assorted, hhds and casks.	28,909	32 00	925,088	Molasses, (estimated crop).....gls	12,000,000	16	1,920,000
Bacon, assorted, .bxs	16,210	20 00	324,200	Oats.....bbls & sacks	467,319	75	350,415
Bacon Hams.....hhds and tierces.	18,539	45 00	734,255	Onions.....bbls	7,960	2 00	15,920
Bacon, in bulk. lbs.	381,140	4	15,245	Oil, linseed.....bbls	2,327	20 00	46,540
Bagging.....pieces	77,682	13 00	1,009,866	Oil, castor.....bbls	1,199	25 00	29,975
Bale Rope.....coils	74,325	10 00	743,250	Oil, lard.....bbls	5,401	20 00	108,020
Beans.....barrels	20,485	2 50	51,212	Peach Brandy.....bbls	4	15 00	60
Butter.....kegs and firkins	45,213	5 00	226,065	Potatoes.....bbls	151,861	2 00	303,722
Butter.....barrels	1,156	20 00	23,120	Pork.....bbls	356,480	8 50	3,030,080
Bees wax.....barrels	698	40 00	27,920	Pork.....hhds	1,421	35 00	497,035
Beef.....barrels	35,598	8 00	284,784	Pork, in bulk.....lbs.	13,564,430	3	406,938
Beef.....tierces	14,662	14 00	205,268	Porter and Ale.....bbls	3,492	7 00	24,444
Beef, dried.....lbs	56,100	6	3,366	Packing Yarn.....reels	3,333	7 00	23,331
Buffalo Robes.....packs	14	65 00	910	Skins, Deer.....pks	1,361	90 00	122,500
Cotton.....bales	1,213,845	29 00	35,200,345	Skins, Bear.....pks	22	15 00	330
Corn Meal.....bbls	47,543	2 00	95,086	Shot.....lbs	5,258	18 00	94,644
Corn, in ear.....bbls	509,583	60	305,749	Soap.....bxs	5,580	2 50	13,950
Corn, shelled.....sacks	1,083,465	1 10	1,192,009	Staves.....M	2,000	40 00	80,000
Cheese.....bxs	52,362	3 00	157,086	Sugar, (estimated crop).....hhds	240,000	40 00	9,600,000
Candles.....bxs	16,750	4 00	67,000	Spanish Moss.....bales	3,406	4 00	13,624
Cider.....bbls	344	3 00	1,032	Tallow.....bbls	4,357	18 00	78,426
Coal, western.....bbls	320,000	60	192,000	Tobacco, leaf.....hhds	47,882	55 00	2,633,510
Dried Apples and Peaches.....bbls	1,585	2 50	3,962	Tobacco, strips.....hhds	8,000	90 00	720,000
Feathers.....bags	2,594	20 00	64,800	Tobacco, chewing, kegs and boxes...	6,390	12 00	76,680
Flaxseed.....tierces	4,393	9 00	39,537	Tobacco.....bales	118	3 00	354
Flour.....bbls	706,958	5 00	3,534,790	Twine.....bundles and boxes.....	2,132	11 00	23,450
Furs, hhds, bundles and boxes.	410	....	650,000	Vinegar.....bbls	1,199	4 00	4,796
Hemp.....bales	21,584	19 00	410,096	Whiskey.....bbls	135,333	7 00	947,331
Hides.....bales	47,662	1 25	59,575	Window Glass.....bxs	4,280	4 00	17,040
Hay.....bales	61,934	2 75	170,317	Wheat.....bbls & sks	149,181	1 80	268,529
Iron, pig.....tons	701	30 00	21,030	Other various articles—estimated at	5,000,000		
Lard.....hhds	459	60 00	27,540	Total Value.....			\$79,779,151
Lard.....bbls and tes	216,031	17 00	3,672,527	Total in 1846-47.....			80,033,256
Lard.....kegs	303,661	3 00	910,933	Total in 1845-46.....			77,193,464
Leather.....bundles	6,316	20 00	126,320	Total in 1844-45.....			57,199,122
Lime, western.....bbls	14,920	1 00	14,920				
Lead.....pigs	606,966	2 80	1,695,504				

EXPORTS OF SUGAR AND MOLASSES, FROM NEW-ORLEANS, FOR FIVE YEARS, (UP THE RIVER EXCEPTED,) FROM 1ST SEPTEMBER TO 31ST AUGUST.

Whither Exported.	1847-48.		1846-47.	
	Sugar.	Molasses.	Sugar.	Molasses.
	hhds.	bbls.	hhds.	bbls.
New York.....	36053	2600	5747	31225
Philadelphia.....	19808	1512	117	10871
Charleston, S. C.....	3355	539	....	6660
Savannah.....	806	....	118	2334
Providence & Bristol, R. I.....	....	....	1043	602
Boston.....	3674	869	1177	5067
Baltimore.....	11149	3258	1522	12002
Norfolk.....	....	....	....	....
Richmond & Petersb'rg, Va }	6888	861	....	7121
Alexandria, D. C.....	230	....	....	112
Mobile.....	5310	1604	....	9645
Apalachicola and Pensacola.	1778	426	....	3984
Other Ports.....	171	273	2142	1015
Total.....	89188	11942	11866	90638
			50113	5451
			4053	42908

COMMERCE OF AMERICAN CITIES.

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Whither Exported	1845-46.				1844-45.				1843-44.			
	Sugar.		Molasses.		Sugar.		Molasses.		Sugar.		Molasses.	
	hhds.	bbls.	hhds.	bbls.	hhds.	bbls.	hhds.	bbls.	hhds.	bbls.	hhds.	bbls.
New-York.....	33068	2448	3002	17515	49442	6794	9875	34322	11422	217	1882	15744
Philadelphia.....	21804	2421	580	13925	21392	1422	2418	11575	8478	697	354	4214
Charleston, S. C.....	3412	1198	2	6328	4426	95	5610	1509	.....	.....	.....	5467
Savannah.....	1062	65	.....	2214	782	10	2686	483	.....	.....	.....	1254
Providence and Bristol, R. I.....	.....	.....	579	280	.....	.....	1472	1051	.....	.....	475	55
Boston.....	3208	1288	318	1402	6062	543	2124	14221	217	.....	.....	1001
Baltimore.....	9143	1672	185	5181	12564	480	547	10943	5492	42	586	5231
Norfolk.....	.....	.....	.....	.....	.....	.....	.....	.....	562	.....	.....	2039
Richmond and Petersburg, Va.....	3997	1215	27	3767	4500	208	96	6029	1500	1	.....	1581
Alexandria, D. C.....	175	.....	.....	428	201	.....	95	84	280	.....	.....	350
Mobile.....	5739	1020	10	13464	3534	668	76	5218	3257	17	.....	2836
Apalachicola and Pensacola.....	1067	158	.....	2039	838	102	1795	1070	548	.....	.....	2440
Other Ports.....	533	8	.....	671	760	239	391	881	42	22	112	750
Total.....	83208	11493	4703	67214	104501	10561	17094	94415	33395	1544	3409	42968

EXPORTS OF FLOUR, PORK, BACON, LARD, BEEF, LEAD, WHISKEY AND CORN, FOR
THREE YEARS, FROM 1ST SEPTEMBER TO 31ST AUGUST.

Ports.	1847-48.							
	Flour.	Pork.	Bacon.	Lard.	Beef.	Lead.	Whiskey	Corn.
	Bbls.	Bbls.	Hhds.	Kgs.	Bbls.	Pigs.	Bbls.	Sks.
New-York.....	80940	103885	10542	299871	6662	358989	9785	262333
Boston.....	210545	104290	5655	391690	8523	144181	687	268501
Philadelphia.....	26452	15920	5482	59998	575	79438	4228	6667
Baltimore.....	50	31439	6028	74947	1528	10431	5364	.....
Charleston.....	8235	2328	4218	9777	311	35	12419	6937
Other coastwise ports.	39635	13241	11865	13203	2725	.....	37977	59007
Cuba.....	14038	2134	918	132407	427	.....	.....	59486
Other foreign ports..	94624	45126	1356	413603	20630	1755	502	560630
Total.....	472519	318363	46054	1395496	41381	594929	71090	1223861

Ports.	1846-47.							
	Flour.	Pork.	Bacon.	Lard.	Beef.	Lead.	Whiskey	Corn.
	Bbls.	Bbls.	Hhds.	Kgs.	Bbls.	Pigs.	Bbls.	Sks.
New-York.....	63877	77828	3480	209945	9167	339560	8210	107808
Boston.....	96507	76755	2379	16513	9053	123917	1162	130678
Philadelphia.....	13296	5247	852	53377	564	135469	4856	15394
Baltimore.....	3637	17167	1159	25251	556	9992	7102	3253
Charleston.....	37720	1004	9875	5362	150	465	8180	800
Other coastwise ports.	8381	11033	11092	19813	2943	1000	33005	43642
Cuba.....	43061	1092	1015	144002	467	149	.....	133798
Other foreign ports..	105337	40394	3053	293714	29096	13716	743	2076298
Total.....	1319506	220520	25904	907977	51996	634258	63259	2500813

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Ports.	1845-46.							
	Flour.	Pork.	Bacon.	Lard.	Beef.	Lead.	Whiskey	Corn.
	Bbls.	Bbls.	Hhds.	Kgs.	Bbls.	Pigs.	Bbls.	Sks.
New-York.....	83854	88228	2873	204323	5162	369681	4098	172186
Boston.....	122148	89164	846	190544	3501	139364	159	289533
Philadelphia.....	250	29783	1238	69153	99	70113	647	3671
Baltimore.....	.....	19523	729	39619	446	11961	2175	1000
Charleston.....	11476	2286	1962	5677	275	4620	8982	87953
Other coastwise ports..	68441	13434	12720	20671	4490	8460	41869	175582
Cuba.....	7094	1005	610	92336	391	.....	.....	.....
Other foreign ports.....	279931	28354	64	168621	43798	174086	260	811574
Total.....	573194	272319	21042	790904	58162	712925	58181	941589

Is the above, the Exports to Mobile, &c., via the Pontchartrain Railroad and New Canal, are included.

MONTHLY ARRIVALS, OF SHIPS, BARKS, BRIGS, SCHOONERS, AND STEAMBOATS, FOR FIVE YEARS, FROM 1ST SEPTEMBER TO 31ST AUGUST.

Months.	1847-48.							1846-47.						
	Ships.	Barks.	Brigs.	Schrs.	St. Ships	Total.	S. Boats.	Ships.	Barks.	Brigs.	Schrs.	St. Ships	Total.	S. Boats.
September..	17	13	15	41	6	92	184	37	12	19	42	7	117	141
October....	43	27	18	44	12	144	288	78	30	31	80	7	226	177
November..	146	45	31	62	15	299	266	67	35	63	63	9	237	281
December..	99	61	66	72	14	312	311	72	45	62	43	8	230	337
January....	102	82	74	97	18	373	349	78	64	91	99	6	338	346
February...	97	60	59	74	16	306	316	42	34	63	85	5	229	298
March.....	97	50	47	82	17	293	327	83	53	72	105	1	314	317
April.....	78	42	40	68	11	233	250	86	41	45	86	6	264	293
May.....	90	42	35	96	22	285	229	77	51	87	166	11	392	284
June.....	88	39	33	49	20	229	171	51	38	54	101	19	263	251
July.....	68	34	24	59	26	211	152	53	30	52	67	16	218	174
August....	36	14	20	51	29	150	134	45	18	24	52	14	153	125
Total.....	955	509	462	795	206	2927	2977	769	451	663	989	109	2981	4094

Months.	1845-46.						1844-45.					
	Ships.	Barks.	Brigs.	Schrs.	Total.	S. Boats.	Ships.	Barks.	Brigs.	Schrs.	Total.	S. Boats.
September..	24	7	7	14	52	164	26	9	12	8	55	120
October....	86	25	20	26	157	234	69	16	14	6	105	165
November..	81	22	33	39	175	220	74	25	29	28	156	233
December..	80	49	48	42	219	245	83	39	37	29	189	269
January....	67	77	74	62	280	298	118	48	57	48	271	279
February...	29	21	36	50	136	293	52	44	56	52	204	272
March.....	67	24	33	32	156	299	93	40	63	49	244	281
April.....	110	40	47	37	234	294	78	34	48	34	194	242
May.....	60	30	27	61	178	271	32	19	12	25	88	238
June.....	44	25	42	30	141	184	52	12	6	14	84	168
July.....	52	24	39	61	176	161	23	8	8	12	51	154
August....	43	33	41	64	181	117	18	3	10	11	42	90
Total.....	743	377	447	518	2085	2770	718	297	351	316	1689	2530

Months.	1843-44.					S. Boats.
	Ships.	Barks.	Brigs.	Schrs.	Total.	
September.....	22	7	14	27	70	104
October.....	55	13	21	25	114	178
November.....	117	36	53	36	242	230
December.....	81	43	49	51	230	309
January.....	65	24	42	47	178	292
February.....	73	32	37	40	182	278
March.....	69	25	40	38	172	270
April.....	82	29	54	39	204	262
May.....	46	22	30	32	130	236
June.....	29	16	16	25	86	188
July.....	10	5	12	10	37	120
August.....	16	4	8	13	41	103
Total.....	665	256	376	389	1686	2570

COMPARATIVE STATEMENT OF THE RECEIPTS, EXPORTS AND STOCKS OF COTTON, AT
THE FOLLOWING PLACES AT THE DATES ANNEXED.

Ports.		Stocks on hand Sept. 1.		Received since 1st Sept.	
		1847.	1846.	1847.	1846.
New Orleans.....	August 31	23,493	6,332	1,188,733	707,324
Mobile.....	August 22	24,172	7,476	436,930	322,750
Savannah.....	August 24	7,787	5,922	241,065	233,790
Charleston.....	August 25	29,655	8,709	260,223	348,976
Florida.....	August 12	2,108	1,088	150,817	127,908
Virginia and N. Carolina.....	August 12	488	200	7,598	17,203
Texas.....	August 29	32	1,500	39,742	9,500
New York.....	August 14	83,259	46,539	.....	.....
Other Ports.....	August 12	26,682	20,950	.....	.....
Total Bales.....		197,636	98,716	2,325,108	1,767,461
Total to dates, 1846-7.....		98,716	.....	1,767,461	.....
Increase this year.....		98,920	.....	557,647	.....
Decrease.....		.....	.....	.....	.....

Exported from September 1, 1847, to dates. }

Ports.		To Great Britain.		To other Foreign Ports.		Total Foreign Ports.		U. States North'n Ports.
			France.					
New Orleans.....	Aug. 31	654,083	140,968	154,807	949,858	252,039		
Mobile.....	Aug. 22	224,673	61,212	29,070	314,955	107,638		
Savannah.....	Aug. 24	119,897	5,177	1,411	126,485	93,946		
Charleston.....	Aug. 25	153,090	29,579	16,177	198,846	97,835		
Florida.....	Aug. 12	40,338	.....	7,674	48,012	98,360		
Virginia & N. Carolina.....	Aug. 12	68	.....	364	432	1,958		
Texas.....	Aug. 29	.....	.....	772	772	28,289		
New York.....	Aug. 14	108,049	37,992	41,730	187,771	.....		
Other Ports.....	Aug. 12	7,420	1,412	2,646	11,478	.....		
Total Bales.....		1,307,616	276,340	254,631	1,838,609	680,365		
Total to dates, 1846-7.....		823,210	236,087	161,235	1,220,532	597,009		
Increase this year.....		484,408	40,253	93,416	618,077	83,356		
Decrease.....		.....	.....	.....	.....	.....		

COMMERCE OF AMERICAN CITIES.

Exported fr. Sept. 1, 1846, to dates in '47.

Ports.			To Great Britain	To France	To other Foreign Ports.	Total Foreign Ports.	U. States Ports.	Stocks on hand and on ship-board.	
								1846.	1847.
New-Orleans	Aug. 31	385,368	95,719	83,920	565,007	159,501	37,401	23,493	
Mobile	Aug. 22	127,518	38,638	19,784	185,940	97,853	28,062	27,607	
Savannah	Aug. 24	107,227	11,150	944	119,321	96,089	9,450	5,661	
Charleston	Aug. 25	121,662	51,452	17,222	190,336	156,040	11,602	28,478	
Florida	Aug. 12	30,896	2,592	3,238	36,726	73,029	2,345	2,285	
Virginia & N. Carolina	Aug. 12	152	.....	.....	152	6,417	700	650	
Texas	Aug. 29	.....	.....	543	543	8,080	747	32	
New-York	Aug. 14	49,440	36,111	34,898	120,449	.....	56,960	108,013	
Other Ports	Aug. 12	947	425	686	2,058	.....	.....	.....	
Total Sales		823,210	236,057	161,235	1,220,532	597,009	147,267	196,219	
Total to dates, 1846-7		.....	.....	.....	.....	.....	196,219	.....	
Increase this year		.....	.....	.....	.....	.....	48,952	.....	
Decrease		.....	.....	.....	.....	.....	.....	.....	

☞ We have taken from New-Orleans the amounts received from Mobile, Florida and Texas. Also from Charleston, the receipts from Savannah—and Mobile the receipts from Florida.

The exports from Georgetown to New-York are added to the Charleston receipts, and the exports from Darien to Liverpool and New-York are added to the Savannah receipts.

The exports from Mobile and Florida to New-Orleans, and those from Savannah to Charleston, have been deducted from Exports to Northern Ports.

EXPORTS OF COTTON AND TOBACCO, FROM NEW-ORLEANS, FOR TEN YEARS—COMMENCING 1ST SEPTEMBER, AND ENDING 31ST AUGUST.

Cotton—Bales.

Whither Exported.	1847-48.	1846-47.	1845-46.	1844-45.	1843-44.	1842-43.	1841-42.	1840-41.	1839-40.	1838-39.
Liverpool	619817	367810	521953	529675	488817	624681	933990	396010	459043	297783
London	.....	48	159	2025	518	61	38	304	113	6
Glasgow & Greenock	27996	10598	17893	36213	21965	35831	15574	20415	26683	7390
Cowes, Falmouth, &c	6270	6102	8134	17975	14893	15939	10740	9188	13560	2439
Cork, Belfast, &c	.....	810	14181	.....	2182	2996	1108	4393	4540	2130
Brave	123856	90103	146153	112995	107973	159658	161103	157277	206311	110978
Bordeaux	3178	330	2315	2314	1418	2861	2,247	2807	6581	1348
Marseilles	8659	3323	6806	7857	7462	9982	16992	21932	21969	6371
Nantes, Cotte and Rouen	5875	1963	4254	1854	3127	8374	2930	1914	5609	2070
Amsterdam	1831	.....	2019	1253	1360	2593	584	.....	3688	49
Rotterdam & Ghent	304	585	53	2355	512	2173	2907	.....	709	.....
Bremen	8716	4369	3419	9211	2770	13303	6369	1706	1084	47
Antwerp, &c	14170	2912	7-38	7196	8499	17693	5209	2264	7377	.....
Hamburg	7091	7466	3585	9123	3156	13664	5678	2983	6846	310
Gottensburg	4887	4376	3877	1630	402	114	286	2793	2994	947
Spain and Gibraltar	32565	17705	1679	821	.....	401	78	561	1-08	1225
Havana, Mexico, &c	25468	9376	29800	62083	33151	21177	12818	19002	30594	3380
Genoa, Trieste, &c	45228	30549	52607	27801	19707	17668	10610	16801	25652	4680
China	1490	.....	.....	2353	.....	4303	.....	.....	.....	.....
Other foreign ports	13057	6579	8050	2267	1208	1342	174	90	1044	113
New-York	67578	55187	74757	52880	82814	48036	31215	55930	46354	62175
Boston	143989	75546	111666	75357	72400	73891	54062	81626	54492	49407
Providence, R. I.	1566	470	5783	78	211	1910	3132	1811	3701	.....
Philadelphia	16213	13582	13690	6784	6919	3253	2846	5721	6185	6371
Baltimore	12328	7288	5507	3640	4698	3218	1703	4832	3045	3450
Portsmouth	5733	3491	2769	1053	4136	.....	2658	9025	5089	5369
Other coastwise ports	3132	1437	910	2423	3280	3000	3716	581	6020	7171
Western States	1500	2500	5000	6000	2500	2000	1722	.....	.....	.....
Total	1301297	724508	1054857	984616	895375	1088870	749967	821289	948360	579179

RECAPITULATION. Cotton—Bales.

Whither Exported.	1847-48.	1846-47.	1845-46.	1844-45.	1843-44.	1842-43.	1841-42.	1840-41.	1839-40.	1838-39.
Great Britain.....	654063	385368	562320	585888	527675	679438	421450	430310	504768	308787
France.....	140968	95719	159528	125020	119980	186875	183272	183931	240490	120767
North of Europe.....	50056	26297	28841	33035	17907	50882	21207	9836	23742	1466
South of Europe and China.....	104751	57623	84086	92458	52855	43543	23506	36364	57754	9425
Coastwise.....	252039	159401	220082	148215	176958	134132	99832	160847	122566	137734
Total.....	1201897	724508	1054857	984616	895375	1088870	749267	891288	949390	579179

Tobacco—Hhds.

Whither Exported.	1847-48.	1846-47.	1845-46.	1844-45.	1843-44.	1842-43.	1841-42.	1840-41.	1839-40.	1838-39.
Liverpool.....	8706	3374	8976	4947	8808	6788	6930	5259	3827	4115
London.....	10008	5173	12888	6475	8291	9851	7212	8732	4320	3725
Glasgow & Greenock Cowes, Falmouth, &c.....	1153	1148	2641	1131	5424	10798	6827	6681	992	871
Cork, Belfast, &c.....	—	—	—	—	—	—	—	—	—	—
Havre.....	2201	1159	2215	3514	4846	4648	4037	4224	3655	1455
Bordeaux.....	128	242	1067	1565	1156	2332	1004	814	1107	—
Marseilles.....	2625	2096	1006	3934	5102	4665	1933	1774	1844	315
Nantz, Cette and Rouen.....	—	—	—	—	—	—	—	—	—	—
Amsterdam.....	—	—	451	50	3775	2700	1138	—	—	234
Rotterdam & Ghent..	75	568	1104	1014	917	2923	1882	—	—	—
Bremen.....	5252	4446	6328	12012	9602	7888	8997	4012	2464	1366
Antwerp, &c.....	3371	1652	4294	3862	2178	5657	3690	1219	1090	—
Hamburg.....	239	403	181	786	2303	1477	3401	1064	1465	—
Gottenburg.....	945	949	943	909	734	963	916	1559	745	939
Spain and Gibraltar..	7692	11795	9843	6749	10781	4496	7204	4148	3843	3400
Havana, Mexico, &c.	617	—	—	903	1601	1063	981	1020	1013	618
Genoa, Trieste, &c..	3388	5046	2375	3001	1556	1760	550	2	44	506
China.....	—	—	—	—	—	—	—	—	—	—
Other foreign ports..	975	1008	298	794	1177	217	516	667	343	315
New-York.....	9573	5458	4848	6936	6960	10533	1090	7466	8132	8174
Boston.....	1619	2664	913	4938	2585	3650	2351	3109	2888	2816
Providence, R. I.....	—	—	—	—	—	—	—	—	—	—
Philadelphia.....	1369	2779	1030	2536	1286	2845	936	2126	1963	1291
Baltimore.....	200	301	427	478	1167	2433	208	517	219	290
Portsmouth.....	—	—	—	—	—	—	—	—	—	—
Other coastwise ports	228	115	217	2145	1100	2194	225	287	482	225
Western States.....	—	—	—	—	—	—	—	—	—	—
Total.....	60364	50376	62045	68679	81249	89891	68958	54667	40436	30790

RECAPITULATION.

Great Britain.....	19867	9695	24505	12553	22522	27437	20969	20665	9139	8748
France.....	4954	3497	4288	9013	11104	11645	6974	6812	6606	1776
North of Europe.....	10475	8018	13301	19051	20175	21618	20252	8040	6005	2654
South of Europe and China.....	12079	17849	12516	11029	14349	7536	9053	5645	5092	4806
Coastwise.....	12989	11317	7435	17033	13098	21655	10810	13505	13684	12902
Total.....	60364	50376	62045	68679	81249	89891	68958	54667	40436	30790

STATEMENT OF COTTON.

Stock on hand 1st September, 1847.....	Bales	23,490
Arrived since the 25th ultimo.....	4,920	
Arrived previously.....	1,208,885	
Total receipts for twelve months.....	1,213,805	
Addition made from waste and damaged cotton and samples ; estimated.....	2,000	
	<u>1,215,805</u>	
	1,239,298	
Exported since 25th ultimo.....	612	
Exported previously.....	1,201,285	
Total Exports for twelve months.....	<u>1,201,897</u>	
Stock on hand 1st September, 1848.....	Bales	37401

STATEMENT OF TOBACCO.

Stock on hand 1st September, 1837.....	Hhds.	22,336
Arrived since 25th ultimo.....	432	
Arrived previously.....	55,450	
Total receipts for twelve months.....	<u>55,882</u>	
	78,218	
Exported since 25th ultimo.....	1,585	
Exported previously.....	58,779	
Total Exports for twelve months.....	<u>60,364</u>	
City consumption, baling, &c.....	3,000	
	<u>63,364</u>	
Stock on Hand 1st September, 1848.....	Hhds.	14,854

COMPARATIVE ARRIVALS, EXPORTS AND STOCKS OF COTTON AND TOBACCO AT NEW-ORLEANS, FOR TEN YEARS—FROM 1ST SEPTEMBER, EACH YEAR TO DATE.

Years.	Cotton—Bales.			Tobacco—Hhds.		
	Arrivals.	Exports.	Stocks.	Arrivals.	Exports.	Stocks.
1847-48.....	1,213,805	1,201,897	37,401	55,882	60,364	14,851
1846-47.....	740,669	724,508	23,493	55,588	50,376	22,336
1845-46.....	1,053,633	1,054,857	6,332	72,896	62,045	17,924
1844-45.....	979,238	984,616	7,556	71,493	88,679	7,673
1843-44.....	910,854	895,375	12,934	82,435	18,249	4,850
1842-43.....	1,089,642	1,088,870	4,700	92,509	89,891	4,873
1841-42.....	740,155	749,267	4,428	67,555	68,058	2,255
1840-41.....	822,870	821,228	14,490	53,170	54,667	2,758
1839-40.....	954,445	949,320	17,867	43,827	40,436	4,409
1838-39.....	578,514	579,179	10,308	28,153	30,780	1,294

COMPARATIVE RATES OF EXCHANGE ON LONDON, PARIS, AND NEW-YORK, ON THE 1ST OF EACH MONTH, FOR THREE YEARS PAST. [60 day bills.]

	1847-48.			1846-47.			1845-46.		
	Lond.	Paris.	N. York.	Lond.	Paris.	N. York.	Lond.	Paris.	N. York.
	pm.		dia.	pm.		dia.	pm.		dia.
September.....	5½	5 35	1½	8	5 31	1½	9½	5 26	½
October.....	6½	5 40	2½	8½	5 32	1½	8½	5 31	2
November.....	5	5 45	3½	7	5 41	1½	8	5 32	2
December.....	5	5 45	2½	5½	5 48	1½	6	5 37	2½
January.....	8	5 32	2½	4½	5 50	2	7	5 36	2½
February.....	8½	5 32	2½	5	5 45	2½	6½	5 37	2½
March.....	7½	5 35	2½	3	5 56	2½	6½	5 37	2½
April.....	7½	—	2	2	5 55	2½	7½	5 85	2
May.....	4	—	2½	5	5 45	1½	8½	3 31	1½
June.....	6½	—	2½	4½	5 40	2½	7½	5 40	2½
July.....	7½	5 20	1½	5	5 36	2	6½	5 42	2½
August.....	8½	5 17	1	4½	5 38	1½	7	5 41	1½

COMPARATIVE PRICES OF MIDDLING TO FAIR COTTON AT NEW-ORLEANS,

On the first of each month during a period of five years—together with the total receipts at New Orleans, and the total crops of the United States.

	1847-48.	1846-47.	1845-46.	1844-45.	1843-44.
Months.	Cents.	Cents.	Cents.	Cents.	Cents.
September.....	10½a12	7½a 9	7½a 8½	6 a 7½	5½a 8
October.....	10 a11	8½a10	6½a 8½	5½a 7½	7 a 8½
November.....	7½a 8½	9 a10½	7 a 8	5½a 6½	6½a 8
December.....	6½a 7½	9 a10½	6½a 7½	4½a 6½	7½a 8½
January.....	6½a 7½	10 a11½	6½a 7½	4½a 6½	8½a10½
February.....	6½a 8	11½a13	7½a 7½	4½a 6½	8½a10
March.....	6½a 7½	9½a11	6½a 8½	5 a 6½	8½a 9½
April.....	6½a 7½	10½a11½	6½a 8½	5½a 7½	7½a 9½
May.....	5 a 6½	10½a12½	6½a 8½	5½a 7½	6½a 8½
June.....	5½a 7½	9½a11½	6½a 8	5½a 7½	7 a 8½
July.....	5½a 7½	9½a10½	6½a 8	6½a 7½	6½a 8½
August.....	5½a 7½	10½a12	7 a 8½	6½a 7½	6½a 8
	Bales.	Bales.	Bales.	Bales.	Bales.
Receipts—New-Orleans.....	1,188,733	707,324	1,053,633	979,238	910,854
Crop of United States.....	2,350,000	1,800,000	2,100,537	2,400,000	2,030,409

COMPARATIVE PRICES OF SUGAR ON THE LEVEE, ON THE 1ST OF EACH MONTH, FOR FIVE YEARS.

	1847-8.	1846-7.	1845-6.	1844-5.	1843-4.
Months.	Cents.	Cents.	Cents.	Cents.	Cents.
September.....	5 a 7½	4½a 7½	6 a 6½	5 a 6½	5½a 6½
October.....	5 a 7½	6½a 9	6 a 7½	5 a 9½	6 a 7
November.....	3 a 5½	5½a 7	5 a 7	4 a 5½	5 a 6½
December.....	2½a 5	4½a 7	4 a 6½	3 a 5½	4½a 6½
January.....	2 a 5	5 a 7½	4½a 6½	2½a 5½	4½a 7½
February.....	2½a 5½	5 a 7½	4 a 6½	2½a 5½	5 a 7½
March.....	2½a 5	5½a 7½	4 a 6½	3 a 5½	5 a 7½
April.....	2½a 5	5½a 7½	4 a 6½	5 a 6½	5½a 7½
May.....	1½a 4½	5 a 7½	4½a 6½	5 a 6½	5½a 7½
June.....	1½a 4½	5 a 7½	4 a 6½	4½a 6½	4½a 6½
July.....	2½a 4½	5 a 7½	4 a 6½	4½a 6½	4½a 6½
August.....	2½a 4½	5½a 8	4½a 7½	5½a 7	4½a 6½

COMPARATIVE PRICES OF MOLASSES ON THE LEVEE, ON THE FIRST OF EACH MONTH, FOR FIVE YEARS.

	1847-8.	1846-7.	1845-6.	1844-5.	1843-4.
Months.	Cents.	Cents.	Cents.	Cents.	Cents.
September.....	28 a32	15 a22	24 a27	26 a28	18 a21
October.....	28 a32	20 a25	21 a24	24 a26	23 a24
November.....	22½a23	26 a26½	21 a22	20 a21	14 a20½
December.....	19½a19½	23 a23½	20 a—	20½a20½	20 a21
January.....	17 a17½	24½a25	21 a21½	16½a17½	22½a23
February.....	17 a19	17 a—	21 a21½	14½a16	22 a23
March.....	15 a21	29 a29½	22½a23	20½a21	23 a24
April.....	15 a21	25 a20	25 a25½	25 a26	23 a25
May.....	12 a16	26 a30	23 a23½	24 a27	25 a26½
June.....	15 a20	26 a30	18 a22	18 a27	24 a25
July.....	15 a20	26 a30	15 a20	20 a27	24 a25
August.....	15 a20	28 a31	15 a31	26 a28	4

COMMERCE OF AMERICAN CITIES.

COMPARATIVE PRICES OF FLOUR, ON THE FIRST OF EACH MONTH, FOR FIVE YEARS.

Months.	1847-8.	1846-7.	1845-6.	1814-5.	1843-4.
	Dollars.	Dollars.	Dollars.	Dollars.	Dollars.
September.....	4½ a 6	3½ a 4	3½ a 4½	— a 6	4½ a 4½
October.....	4 a 5	4 a 4½	3½ a 4½	3½ a 4½	4 a 4½
November.....	5½ a 5½	5 a 5½	4½ a 5½	4 a 4½	4 a 4½
December.....	5½ a 6	4½ a 5½	7½ a 8½	4 a 4½	4½ a 4½
January.....	5½ a 6	4½ a 5½	5½ a 7	4½ a 5½	4½ a 4½
February.....	4½ a 5½	6 a 6½	5 a 6½	3½ a 4½	4½ a —
March.....	5 a 5½	5½ a 6½	4½ a 5½	4 a 4½	4½ a 4½
April.....	6½ a 5½	6 a 6½	4½ a 5	4½ a 4½	4½ a 4½
May.....	4½ a 5½	5½ a 6½	4 a 4½	4½ a 4½	4½ a 4½
June.....	4½ a 4½	6½ a 7½	3½ a 4½	3½ a 4½	3½ a 3½
July.....	4½ a 5	6 a 7	3 a 4	3½ a 4½	3½ a 4½
August.....	4 a 4½	4 a 5½	3½ a 4	4 a 4½	4 a 5½

COMPARATIVE PRICES OF MESS AND PRIME PORK, ON THE FIRST OF EACH MONTH, FOR TWO YEARS.

Months.	1847-8.		1846-7.	
	Mess.	Prime.	Mess.	Prime.
	\$	\$	\$	\$
September.....	15 a—	12½ a 12½	8½ a 8½	6½ a 6½
October.....	13½ a 13½	12½ a 12½	8½ a 8½	7 a 7½
November.....	12½ a 12½	11½ a—	9½ a 9½	8 a 8½
December.....	10½ a 11	8½ a 9	8½ a 9	7½ a—
January.....	9 a 9½	7 a 7½	9½ a 9½	8½ a 8½
February.....	9½ a 9½	7 a 7½	14 a 14½	12 a 13
March.....	9 a 9½	7 a 7½	15 a 15½	12½ a 12½
April.....	8½ a 9	6½ a 7	15 a 15½	12½ a 12½
May.....	8½ a 8½	6½ a 7	16 a 16½	12½ a 12½
June.....	9½ a—	7½ a 7½	15½ a 16½	12½ a 12½
July.....	10 a—	7½ a 7½	16½ a 16½	13½ a 13½
August.....	10 a 10½	7½ a 8	16 a—	13 a—

MONTHLY ARRIVALS OF FLATBOATS, FOR THE PAST SEASON.

Months.	Ohio.	Kentucky.	Indiana.	Virginia.	Pennsylvania.	Illinois.	Missouri.	Iowa.	Arkansas.	Alabama.	Tennessee.	Mississippi.	Total.
September.....	6	—	—	—	—	—	—	—	—	—	—	—	8
October.....	5	—	3	—	—	—	—	—	—	—	—	—	8
November.....	45	17	39	—	20	—	—	2	—	—	—	2	125
December.....	72	22	56	9	—	—	—	—	—	10	1	—	170
January.....	41	21	82	7	27	8	—	—	—	3	—	—	189
February.....	39	27	68	2	—	2	—	1	1	—	2	—	142
March.....	65	19	69	3	—	7	2	2	—	9	6	13	295
April.....	27	37	172	1	20	23	—	—	1	30	16	16	343
May.....	15	32	49	1	—	8	—	—	1	18	8	—	132
June.....	7	15	12	1	—	1	—	8	—	9	11	—	64
July.....	3	11	3	—	—	2	—	—	—	—	1	—	20
August.....	1	12	2	—	—	—	—	—	—	—	—	—	15
Total.....	326	213	657	24	67	51	2	13	3	66	57	32	1511

Also about 600 from various states, with Cattle, Sheep, Hogs, Lumber, &c.—making a total of 2,111.

COMPARATIVE PRICES OF CORN, IN SACKS, ON THE FIRST OF EACH MONTH, FOR FIVE YEARS.

Months.	1847-8.	1846-7.	1845-6.	1844-5.	1843-4.
	Cts.	Cts.	Cts.	Cts.	Cts.
September.....	50a55	36a40	40a42	43a44	42a43
October.....	50a75	60a65	35a38	40a—	37a40
November.....	41a50	58a75	45a50	43a45	34a35
December.....	45a50	60a70	80a82	34a37	43a45
January.....	54a60	65a67	55a63	37a38	36a38
February.....	40a55	80a90	40a50	38a40	32a33
March.....	36a42	75a90	47a52	40a11	35a35
April.....	30a38	80a95	42a50	35a36	40a42
May.....	22a28	55a70	40a50	35a38	40a41
June.....	32a36	65a80	35a40	28a32	33a35
July.....	33a39	65a75	25a32	30a34	40a43
August.....	36a42	40a50	30a35	34a36	40a45

COMPARATIVE RATES OF FREIGHT ON COTTON AND TOBACCO, TO LIVERPOOL, HAVRE, AND NEW-YORK, ON THE FIRST OF EACH MONTH, FOR THE PAST TWO YEARS.

Months.	1847-48.			1846-47.		
	Liverpool.	Havre.	New York.	Liverpool.	Havre.	New York.
September.....	1d.	—ct.	1ct.	1d.	1-16	1ct.
October.....	1	1½	1	1	1-16	1
November.....	1	1½	1	1	1	1
December.....	1	1	1	1	1	1
January.....	7-16	1	1	1	1	1
February.....	1	1	1	9-16	1½	1
March.....	15-32	15c16	1	1	2	1½
April.....	9-16	1	1	1	1½	1
May.....	9-16	—	1	1	1½	1
June.....	7-16	—	1	9-16	1	1
July.....	1	—	1	1	1½	1
August.....	5-16	—	1	1	1½	1

Tobacco—Per Hogshead.

September.....	40s. 0d.	—	\$5 50	40s. 0d.	—	\$3 87½
October.....	40	—	4 75	40	—	3 87½
November.....	40	—	6 00	37 6	—	3 87½
December.....	40	9 50	4 75	—	—	3 25
January.....	40	9 50	4 00	57	—	7 50
February.....	39	9 50	4 75	57	—	6 75
March.....	40	—	5 25	—	—	11 00
April.....	40	—	5 25	—	—	8 00
May.....	45	—	7 50	—	—	11 00
June.....	36	—	4 75	—	—	7 75
July.....	35	9 00	4 00	—	\$13	8 50
August.....	30	7 00	2 00	50	13	8 00

IMPORTS OF SPECIE, FOR THREE YEARS, FROM 1ST SEPTEMBER TO 31ST AUGUST.

1847-48.....	\$1,845,808
1846-47.....	6,680,050
1845-46.....	1,872,071
1844-45.....	2,249,138

FOREIGN MERCHANDISE.—DIRECT IMPORTS OF COFFEE, SUGAR AND SALT, FOR
THREE YEARS, FROM 1ST SEPTEMBER TO 21ST AUGUST.

	1847-8.	1846-7.	1845-6.
Coffee, Havana.....	bags 8,590	43,931	10,899
Coffee, Rio.....	bags 239,371	205,111	215,031
Sugar, Havana.....	boxes 12,574	45,889	5,442
Salt, Liverpool.....	sacks 300,943	344,852	259,481
Salt, Turk's Island, &c.....	bushels 361,184	194,431	110,849

The following Tables are taken from the *Commercial Times*, and are interesting as giving the results for the different months:

RECEIPTS, EXPORTS, VALUE AND STOCKS OF COTTON, AT NEW-ORLEANS, IN MONTHLY
PERIODS, FOR 1847-48.—No. 1.

1847-48.	Rec'd.	Exp'ts.	Price.	Val. Ex.	Stocks.
Months.	bales.	bales.	cents.	\$	bales.
September.....	31,838	24,835	11½	1,213,802	30,476
October.....	109,973	40,053	10½	1,808,617	100,491
November.....	103,201	68,955	7½	2,270,687	134,637
December.....	133,464	109,529	7½	3,374,852	158,572
January.....	183,354	113,450	7½	3,883,394	228,476
February.....	172,796	135,255	7½	4,202,799	266,017
March.....	188,897	187,437	7½	5,866,677	267,477
April.....	142,043	162,766	7½	4,928,557	215,454
May.....	78,664	157,124	6	4,006,552	168,494
June.....	34,263	84,289	6½	2,418,640	118,268
July.....	17,211	89,555	6½	3,530,109	35,724
August.....	33,504	50,885	6½	1,279,757	38,835

EXPORTS AND VALUE OF TOBACCO, WHISKEY AND LEAD.—No. 2.

1847-48.	Tobacco.	Value.	Whis- key.	Value.	Lead.	Value.
Months.	hhds.	\$	bbls.	\$	pigs.	\$
September.....	13,340	615,200	3,251	26,008	37,064	92,760
October.....	2,324	116,200	3,133	25,064	46,126	115,315
November.....	1,269	63,450	8,535	68,280	60,654	151,635
December.....	8,116	405,800	9,469	75,752	47,026	117,565
January.....	788	39,400	6,530	52,240	18,825	47,062
February.....	1,602	80,100	6,443	51,544	15,071	37,677
March.....	2,399	119,950	8,977	71,816	12,123	30,307
April.....	3,426	171,300	8,433	67,464	74,716	181,785
May.....	3,284	194,200	6,663	53,304	70,304	175,360
June.....	1,494	324,700	4,034	32,272	67,429	168,572
July.....	8,678	433,900	1,533	12,656	95,413	238,532
August.....	10,095	504,750	1,318	10,544	40,584	101,460

EXPORTS AND VALUE OF SUGAR, MOLASSES, FLOUR AND CORN.—No. 3.

1847-48.	Sugar.	Value.	Molasses	Value.	Flour.	Value.	Corn.	Value.
Months.	hhds.	\$	bbls.	\$	bbls.	\$	sacks.	\$
September.....	442	22,100	50	400	17,820	89,100	24,124	21,711
October.....	395	19,750	249	1,992	30,637	153,185	13,813	12,431
November.....	4,548	227,400	11,433	91,464	31,458	157,590	32,973	29,675
December.....	12,081	604,050	14,348	114,784	60,843	303,215	28,249	25,424
January.....	13,393	669,650	19,872	158,976	49,506	247,530	78,479	70,631
February.....	22,168	1,108,460	19,464	155,712	63,762	318,810	182,641	164,376
March.....	19,088	954,400	13,723	109,784	29,903	145,515	228,387	205,548
April.....	9,954	477,700	5,113	40,994	71,059	355,295	266,041	239,436
May.....	5,224	267,200	3,545	28,360	34,050	170,250	146,118	131,506
June.....	2,006	100,300	779	6,232	27,345	136,725	104,675	94,207
July.....	1,844	92,200	943	7,544	23,349	116,745	98,241	82,026
August.....	344	17,300	794	8,792	26,464	152,420	18,686	16,214

EXPORTS OF PORK, BACON, LARD AND BEEF.—No. 4.

1847-48.	Pork.	Value.	Bacon.	Value.	Lard.	Value.	Beef.	Value.
Months	bbls.	\$	hhds.	\$	kegs.	\$	bbls.	\$
September.....	1,238	12,280	319	15,950	7,624	22,569	196	1,568
October.....	2,480	24,800	654	32,700	8,865	26,593	103	824
November.....	6,265	62,650	674	33,700	23,776	71,328	802	6,416
December.....	33,208	331,090	3,161	158,050	94,430	283,290	7,394	60,752
January.....	46,671	466,710	5,364	269,200	125,011	465,033	10,025	80,200
February.....	49,235	492,350	9,115	455,750	295,499	886,497	3,649	29,192
March.....	75,201	752,010	8,581	429,050	429,467	1,288,389	7,943	62,744
April.....	53,552	535,510	9,377	225,367	225,367	676,101	6,559	52,472
May.....	27,398	273,980	4,340	22,722	82,723	248,169	1,882	15,256
June.....	12,685	126,850	1,489	28,062	28,062	84,186	1,186	9,488
July.....	6,559	65,590	1,541	21,279	21,279	63,837	1,492	11,936
August.....	3,781	37,810	577	28,350	13,654	40,962	650	4,800

VALUE OF EXPORTS FROM NEW-ORLEANS.—No. 5.

Summed up, as per Table No. 1—Cotton; No. 2—Tobacco, Whiskey and Lead; No. 3—Sugar, Molasses, Flour and Corn; No. 4—Pork, Bacon, Lard and Beef, arranged in monthly periods, from September 1, 1847, to date.

1847-48.	No. 1.	No. 2.	No. 3.	No. 4.	Total.
Months	\$	\$	\$	\$	\$
September.....	1,213,808	733,968	133,311	52,967	2,134,054
October.....	1,808,617	256,579	187,358	84,919	2,337,473
November.....	2,270,687	283,365	565,829	174,094	3,293,975
December.....	3,374,862	599,117	1,047,473	835,172	5,856,624
January.....	3,483,294	141,502	1,146,787	1,281,133	6,052,816
February.....	4,302,799	166,321	1,747,298	1,863,789	8,080,207
March.....	5,866,677	222,073	1,415,257	1,532,193	9,036,190
April.....	4,928,557	440,549	1,113,235	1,732,943	8,215,284
May.....	4,006,662	423,264	591,316	824,405	5,845,647
June.....	2,418,040	525,544	337,464	293,474	3,574,522
July.....	2,569,109	685,088	299,505	218,413	3,772,115
August.....	1,279,757	616,754	179,025	111,922	2,187,758

In regard to the great staples, Cotton, Sugar, Tobacco, Western Produce, Hemp and Coffee, we extract at length from the able pen of Mr. Littlefield, of the Prices Current:—

COTTON.—The first arrival of the new crop was on the 9th August—being two days later than the first receipt of the previous year. The quantity was only two bales, and these, as usual with the first receipts, were sold at fancy prices. The whole quantity of the new crop received up to 1st Sept. was 1089 bales, against 140 bales in 1846, 6846 in 1845, and 5720 in 1844; and the sales up to the same date embraced some 350 bales, at 11½ a 12½ cents per lb, the quality ranging from a Middling Fair to Good Fair. Prices gave way somewhat as the receipts increased, and on the 1st October the range was 10 a 11 cents for Middling to Fair, though this yielding of the rates was more attributable to the difficulty of effecting exchange negotiations than to any other cause, as the demand had nearly kept pace with the arrivals. No further material change took place until about the middle of October, when advices of a severe pressure in the English money market gave a downward inclination to prices, which was rapidly accelerated by each succeeding steamer's accounts, bringing intelligence of immense commercial failures in Great Britain and various parts of the Continent, which continued to spread until the whole fabric of European credit was shaken to its foundation. This state of things, so sudden and unlooked for, of course could not fail to operate most adversely upon the Cotton interest, and the rapid depression in Liverpool, acting on the market here, produced a panic, under the influence of which some sales were made on Wednesday, the 17th November, at 5½ a 5½ cents

Middling, being a decline of *fifty per cent* in a period of little more than two months. This great depression, however, was but momentary, as buyers having means at command at once came forward, and the market immediately recovered fully one cent per pound from the lowest point. From the middle of November to the latter part of March the market maintained a good degree of steadiness, the purchases for France, Spain, and other parts of the Continent, and for our Northern ports, in addition to those for England, being sufficient to sustain prices within a range of $6\frac{1}{2}$ a $7\frac{1}{2}$ cents for Middling to Good Middling during the period above mentioned. On Thursday, the 23d March, the startling intelligence was received of a revolution in France and the abdication of Louis Phillippe. This at once put a stop to business, and buyers for France withdrew altogether, not since to re-enter the market to any important extent. The first intelligence, (which was telegraphic) was speedily confirmed, and was immediately followed by accounts of the rapid extension of the revolutionary movement throughout nearly all the countries of Europe, and thus again, and to a wider extent, were European credit and commerce prostrated. These untoward events (in a commercial point of view) at once gave a backward movement to the Cotton market, and a rapid accumulation of obstacles to the progress of business soon depressed prices to a lower point than we have already noted, and to within a fraction of the lowest point of 1843. These obstacles were the entire withdrawal—as already mentioned—of the buyers for France, and also those for most parts of the Continent, and the impossibility, for a time, of negotiating exchange, even on England, to any important extent. Thus, for a period the market was left almost entirely in the hands of Northern buyers, and the absence of competition carried down prices in the early part of May to $4\frac{1}{2}$ a $5\frac{1}{2}$ cents for Low Middling to Good Middling Louisianas and Mississippi, which was the lowest point of the season. From this extreme depression there has been a gradual recovery, with slight fluctuations, but the amendment has been the result rather of unusually low freights, and a more favorable state of the exchanges than of any very flattering accounts from abroad, though latterly the advices in regard to the state and prospects of trade have been somewhat more encouraging. Tennessee and North Alabama Cottons were, as usual, neglected while the market continued to be abundantly supplied with the low and middling qualities of Louisianas and Mississippi, and most holders, finding it impossible to sell at anything like what might be considered a reasonable price, were compelled to resort to shipments to some extent, in order to relieve themselves of excessive stocks. Not many sales of round lists occurred until about the middle of April, at which time the market opened at $4\frac{1}{2}$ a 5 cents for low to good round average lists, but subsequently fell to $4\frac{1}{2}$ a $4\frac{1}{2}$ cents, at which range the bulk of the sales were made. The market closes with a stock on sale, including all descriptions, estimated at about 10,000 bales, and a total stock on hand, inclusive of all on shipboard not cleared, of 37,401 bales.

The total receipts at this port since 1st September last, *from all sources*, are 1,213,805 bales. This amount includes 25,072 bales received from Mobile, and Florida, and from Texas *by sea*. [That portion of the Texas crop which reaches us via Red River cannot be distinguished from the product of Louisiana.] Deducting from our total receipts the above amount received from Mobile, Florida and Texas, the remainder shows our *receipts proper* to be 1,188,733 bales, or an increase of 481,409 bales as compared with last year. The total exports during the same period are 1,201,897 bales; of which 654,083 bales were shipped to Great Britain, 140,968 to France, 154,807 to the North and South of Europe, Mexico, &c., and 252,039 to United States ports, including 1500 bales to Western States. The increase, as compared with last year, is 268,715 bales to Great Britain, 45,249 to France, 70,887 to the North and South of Europe, &c., and 95,538 to United States ports. The total receipts *at all the Atlantic and Gulf ports*, up to the latest dates received—as shown by our General Cotton Table—are 2,325,180 bales, against 1,767,461 bales to same dates last year; showing an increase of 557,647 bales. This amount, however, it should be understood, does not represent *the total crop of the United States*, as the grand result cannot be attained until full returns up to the 1st September are concentrated at one point. The duty of making up the total crop has for a series of years devolved upon the editors of the *New-York Shipping and Commercial List*; and properly so from the nearer proximity of their point of publication to Europe; and should the forthcoming statement be made up on the usual basis, with the receipts

at Mobile, Florida and the Atlantic ports, between the last dates in our table and the 1st September, the stocks on hand at Macon, Augusta and Hamburg, and the receipts overland at Philadelphia and Baltimore, it is probable that the total crop of 1847-8, as thus computed, will not vary materially from 2,350,000 bales.

SUGAR.—At the date of our last annual report, the Cane crop, then advancing to maturity, presented most flattering promise; and in our closing remarks under this head we took occasion to state that there was good reason to expect that the product of this important staple of our state would exceed that of any previous year since the introduction of its cultivation. This result has been realized, beyond all question, though we are again unable to present the *exact* amount of the crop, and for the same reason stated last year, viz: that the parties who have heretofore ascertained the product of each plantation annually, and published statements embodying their researches, have not resumed their labors. We have again, therefore, to resort to popular estimate, and this places the crop at 240,000 hhds., exclusive of "cistern bottoms"—being an excess of 100,000 hhds. over last year, and of 40,000 hhds. over any previous year. This, with 4900 hhds. estimated to be on hand at the close of last season, would make a supply of 244,000 hhds. The distribution of the crop, as nearly as can be ascertained, has been as follows, all the items being necessarily estimated, except the exports coast-wise, which, according to our table, are equal to about 92,000 hhds., including the shipments out of the state from Attakapas; consumption of the city, and of places in the neighboring states, furnished in small parcels, of which there is no record, and including supplies for the army in Mexico, 15,000 hhds.; taken for refining in the city and state, 10,000; stock now on hand in the state, 12,000; leaving as the quantity taken for the West, 115,000 hhds. This would give the West 45,000 hhds. more of Louisiana sugar than was estimated to be taken last year; but it should be borne in mind that she then took of Cuba sugars equal to about 20,000 hhds—making her actual supply 90,000 hhds. This year the imports from Cuba have been comparatively light, being barely equal to about 5,000 hhds.; and supposing the West to have taken one-half this quantity, the actual increase over last year would be about 20,000 hhds., which is not an improbable amount, considering the low prices, the increase of population, and the extension and improvement of the facilities of transportation. The quantity shipped to the Atlantic ports is equal to about 84,000 hhds., or an increase of 39,500 hhds. over last year.

The first arrival of the new crop was on the 2d of October, five days earlier than the first receipt of the previous year. The quantity was only two hhds., and these were disposed of at 5½ cents per lb., being badly drained and of dark color. From this date to the close of the month, there were no transactions of importance, the receipts of new crop being moderate, and the quality was so inferior that a great portion was unmerchantable and unsaleable. Prices, consequently, rapidly gave way, and by the first of November the range was 3 a 5½ cents for Inferior to Choice—Fair 4½ a 4¾. These continued to be the current rates until the close of the month, when the increasing stock caused prices to give way ½ a cent per lb., the extremes being 2½ a 5 cents for Inferior to Choice—Fair 3½ a 4. This reduction, however, produced a more active demand, buyers for the North, who had heretofore kept aloof, having come forward, and purchased quite freely. From the close of November to the early part of May there were no very marked changes in prices. Occasional fluctuations of an ⅓ a ¼ of a cent took place, the inferior qualities being most affected. The month of May proved a very dull period, and during the latter part of it prices reached their lowest point, the extreme quotations being 1½ a 4½ cents for Inferior to Choice—Fair 3½ a 3¾. Since then the rates have recovered somewhat, though with a limited business, and the closing quotations for lots on the Levee are 2½ a 4½ cents for Inferior to Choice—Fair 3½ a 3¾. The first sales noticed on plantation took place in the early part of November at 4 a 4½ cents per pound. Crops round were generally held at 4 cents, but buyers would not come forward at this rate, and several planters resorted to shipments to the North and West, on their own account. By the 1st of January sales were made at 3½ cents for fair

crops, but subsequently buyers, both on speculation and for shipment, came forward more freely, and considerable sales took place through the months of Jan., Feb., March, &c., generally at $3\frac{1}{2}$ or 4 cents for Fair to Prime crops, though some lots brought $4\frac{1}{2}$ cents. In May the lowest point was touched, when some sales were made at 3 cents for fair crops. There is still an unusual quantity remaining in planters' hands, and the whole stock now on hand in the state is estimated at 12,000 hhds. The quantity received at the Levee for sale has been 128,112 hhds. against 82,000 hhds. last year. Respecting the quality of last year's crop, we may remark, that it has presented an unusually low average. This fact we frequently alluded to in the course of the season, attributing it to the low temperature of the grinding season, which was not favorable for the manufacture of sugar. The scarcity of the Prime and Choice qualities, made by the ordinary process, has been matter of complaint throughout the season.

With respect to the growing crop, it seems to be generally conceded that the prospects for a large yield are by no means as flattering as they were at this period last year. The Stubble, or Ratoon Cane, is represented in many sections to be almost an entire failure, and the Plant Cane generally is said to be less near to maturity by some weeks; thus rendering the liability to damage by frost more imminent. It is true, there has been a considerable increase of cultivation, particularly on Red river, some of the upland parishes, and in Attakapas, but it is supposed that other adverse circumstances will more than counterbalance this advantage, and that in no event is the crop likely to reach the amount produced last year. In our neighboring state of Texas the Sugar culture is steadily advancing, and intelligent parties with whom we have conversed, estimate the product of this year at 4,000 hhds. The following table will exhibit the annual product of Louisiana for a series of years, by which it will be seen that the Cane culture is liable to remarkable fluctuations in its results, according to the character of the seasons.

Crop of 1847, 240,000 hhds.	Crop of 1838, 70,000 hhds.
" 1846, 140,000 "	" 1837, 65,000 "
" 1845, 186,650 "	" 1836, 70,000 "
" 1844, 200,000 "	" 1835, 30,000 "
" 1843, 100,000 "	" 1834, 100,000 "
" 1842, 140,000 "	" 1833, 75,000 "
" 1841, 90,000 "	" 1832, 70,000 "
" 1840, 87,000 "	" 1829, 48,000 "
" 1839, 115,000 "	" 1828, 88,000 "

In regard to a market for the coming crop, we are under the impression that the prospects are in favor of a higher average than was realized last year, even with a very full yield, as the requirements of our own country are constantly increasing, while the product of several of the West India Islands, which has heretofore been brought into competition with our own staple, is likely to be reduced to a comparatively unimportant amount by the voluntary abolition of slavery on the part of the home governments, and by servile insurrection. The same causes will reduce the supply for the European markets, and a stable arrangement of European difficulties, which would re-establish confidence and revive commerce, would doubtless tend to rescue this important staple of our state from its present depression, on both sides of the Atlantic.

TOBACCO.—On the 31st August, 1847, we closed our tables with a stock of Tobacco on hand, including all on shipboard not cleared, of 22,336 hhds., but of this amount there were remaining on sale only some 750 hhds. Prices, which had been gradually advancing for a period of some ten or twelve weeks, were then firm at the following quotations—say for *Leaf* 2 a $2\frac{1}{2}$; *Leaf*, common, 3 a $3\frac{1}{2}$; fair 4 a $4\frac{1}{2}$; fine 5 a $5\frac{1}{2}$; choice 6 a 7; *Segar Leaf*, fillets and wrappers, $2\frac{1}{2}$ a 12 cents per lb. From 1st September to the beginning of March no change of any great moment occurred, the stock being too small and too poorly assorted to admit of any operations of magnitude. Early in November we had occasion to advance our quotations $\frac{1}{2}$ a $\frac{1}{2}$ a cent, the greatest improvement being in the finer grades, and on the 5th of the same month four hhds. of the new crop arrived,

being some four weeks earlier than the first receipt of the preceding year. Even up to the latter part of March, however, owing to the moderate extent of the supply and to the steadiness of the demand, (notwithstanding a further advance of $\frac{1}{2}$ a $\frac{1}{2}$ cent in prices, our quotations for choice then being 6 $\frac{1}{2}$ a 8 cents) there had been no accumulation of stock. At this juncture intelligence of the French revolution reached us. There were many conflicting views among dealers as to the probable course of the new government of France with regard to the Tobacco monopoly, and as to the effect which it would be likely to have upon the trade; but the immediate consequence of the news, and of this diversity of opinion, was a partial suspension of operations. The arrivals for some weeks continued moderate, and as factors evinced no disposition to press their stocks on the market, the few sales made, although at prices rather in favor of the buyer, showed no marked decline. Toward the end of April, however, the receipts had commenced to be more liberal, and during the ensuing three weeks the arrivals embraced about 10,000 hhds., while the sales reported in the same time amounted to but 1500 hhds., though it was stated that probably as much more had been disposed of privately. This state of things gave buyers greatly the advantage, and when, on the 20th May, we resumed our quotations, which we had, owing to the unsettled and uncertain state of the market, been compelled to omit for several weeks, they were, for *Lugs*, 2 a 2 $\frac{1}{2}$; *Leaf*, inferior, 2 $\frac{3}{4}$ a 3, common, 3 $\frac{1}{2}$ a 3 $\frac{3}{4}$, fair 4 a 4 $\frac{1}{2}$, good to choice 4 $\frac{1}{2}$ a 5 $\frac{1}{2}$ cents; being a decline of $\frac{1}{2}$ a 1 cent on the common qualities, and of 1 $\frac{1}{2}$ a 2 $\frac{1}{2}$ cents on the finer grades. At these reduced rates there were sold, up to the first of July, about 7000 hhds. At this time the quantity on sale exceeded 11,000 hhds., and as buyers appeared but little inclined to operate largely, unless at a further reduction, while sellers were naturally more disposed to close off their stocks on the approach of the sickly season, prices again receded $\frac{1}{2}$ a $\frac{1}{2}$ a cent., the sales of the month reaching 6000 hhds. During the last month the demand has been fair for the period of the season, and the transactions have amounted to some 4000 hhds., though a great portion consisted of the description known as "Yellow Banks," which has been most sought after. Prices have about recovered what they lost in July, and owing to the superior character of most that has been sold during the past month, our figures stand higher than they did in June, our present quotations being, for *Lugs*, factory, 1 $\frac{1}{2}$ a 1 $\frac{3}{4}$, planter's, do., 2 a 2 $\frac{1}{2}$; *Leaf*, inferior to common, 3 a 3 $\frac{1}{2}$; fair to fine, 4 a 5, choice and selections, 5 $\frac{1}{2}$ a 6 cents per lb. The amount now remaining in factors' hands is estimated at about 5000 hhds., a considerable portion of which is held at rates decidedly above our closing quotations.

In our last annual report we observed that the course of the Tobacco market during the preceding year had varied greatly from the general anticipation. The same remark applies equally to its course for the past season; but in 1846-7 it was much more favorable than there was any reason to suppose it would be; while during the commercial year just closed, well-based calculations have been completely disappointed and overthrown by a train of circumstances which could not be foreseen or provided against. The revolution in France, already referred to, gave a severe blow to the market before any considerable portion of the crop was disposed of, and the hostilities between Denmark and Holstein, and the consequent blockade of some of the German ports caused an abatement of demand to some extent from that quarter.

It was well understood last fall that the crop was a short one. It is true, that our receipts, as compared with those of last year, show little or no deficiency; but of the 15,000 hhds. received from 1st September to 1st March, not more than 2000 were of the new crop; and deducting the remaining 13,000 from the total arrivals, the receipts of the past crop amount thus far to only about 42,000 hhds. Of the whole quantity received during the past twelve months, there have been inspected at the State Warehouses 34,628 hhds., of which 4746 hhds. were Mason county. For full information in regard to comparative receipts, exports, stocks, &c., we refer to our tables.

As regards the extent and character of the growing crop, we would merely state at this early period, that there are advices in town from many sections, announcing serious injury to it, both in quantity and quality—owing in the first place to drought at the time of planting, (though this was confined to particular sections of considerable extent) and more recently to excessive rains throughout the entire Tobacco-growing region. On his head, however, we shall, no doubt,

be able to furnish our readers with more definite information some few weeks hence, when we shall take occasion to recur to the subject.

WESTERN PRODUCE.—Our records show an immense falling off in the operations in the leading articles under this head during the past year, as compared with the season ending the 1st September last. It will, of course, be remembered by all that a famine in Europe had produced an extraordinary demand for breadstuffs, and the consequent elevation in prices brought forth from our well-filled granaries not only the abundant product of the then current year, but also the hoarded surplus of previous seasons. It was thus that our receipts here, as well as at the other shipping ports of the country, suddenly rose to double those of the year immediately preceding, and to an amount many fold greater than those of any previous year. The very thorough manner in which the West gave up her supplies in 1846-7, and the comparatively limited foreign demand during the past season, have carried back our receipts of Breadstuffs to *less than one-half* what they were last year. Thus our arrivals of *Flour* are 706,958 barrels, against 1,617,675 barrels last year; of *Indian Corn*, equal to 3,600,000 bushels, against 7,065,000 bushels last year; of *Wheat*, equal to 300,000 bushels against 1,670,000 last year; of *Corn Meal*, 47,543 barrels, against 88,159 barrels last year. The Exports show a corresponding reduction. The total Exports of *Flour* amount to 472,519 barrels, against 1,319,506 barrels last year. Of this quantity 15,416 barrels have been sent to Great Britain and Ireland, 88,676 to the West Indies, &c., and the remainder to coastwise ports. Of *Indian Corn*, the total Exports are equal to 3,059,000 bushels, against 6,303,000 bushels last year. Of this quantity, 1,360,000 bushels have been shipped to Great Britain and Ireland, 173,000 to the West Indies, &c., and the remainder to coastwise ports. Of *Wheat*, there have been exported to foreign ports barely 35,000 bushels—nearly all of which was to Great Britain—the bulk of the receipts being shipped to the North, and a portion consumed in our city mills. According to a table published in the New-York Shipping and Commercial List, the comparative exports of Breadstuffs from the various ports of the United States to Great Britain and Ireland, from September 1st to August 1st in the two past years, stood as follows:

	1846-7.	1847-8.
Flour.....bbls.....	2,992,319	178,782
Corn Meal.....bbls.....	826,536	102,318
Wheat.....bushels.....	3,464,400	219,917
Corn.....bushels.....	15,800,917	4,134,912
Rye.....bushels.....	84,333	none.
Oats.....bushels.....	426,881	none.
Barley.....bushels.....	308,324	none.

The speculative mania of the previous year having subsided, there has of course been more steadiness in prices, and the following figures exhibit the extreme fluctuations of the season in this market:—*Flour*—Ohio to the best St. Louis City Mills—lowest point August, \$3 87½ a \$4 25; highest point January, \$5 50 a \$6 per bbl. *Indian Corn*—lowest point May, 23 a 30 cents; highest point December, 58 a 65 cents per bushel, in sacks. *Wheat*—lowest point Aug., 62½ a 75; highest point November, \$1 12½ per bushel, in barrels and sacks. It is understood that the crops throughout the country generally are abundant; and as the foreign demand is scarcely likely to exceed that of last year, there seems a strong probability that prices for the coming year will rule at a rather low average. The trade in *Provisions*, particularly *Pork* and *Lard*, has been more extensive than last year, there having been a considerable increase in the supplies, as will be seen by reference to our tables. Our space will not permit us to follow these articles in their various fluctuations, and we must therefore content ourselves with noting the extreme rates of the season, which have been as follows:—*Pork*, Mess, highest point September 11th, \$14 75 a \$15; lowest point April 26th, \$8 a \$8 12½; Prime, highest point September 11th, \$12 50 a \$12 75; lowest point December 22d, \$6 50 a \$7 per bbl. *Lard*, highest point September 18th, 11 a 15; lowest point April 26th, 3½ a 5½ cents per lb. The total Exports (all packages being reduced to kegs,) are equal to 1,395,496 kegs, against 907,977 kegs last year; and the Exports, foreign, are 546,010 kegs, against 437,716 kegs last year; or an increase of 108,294 kegs. Other articles, of more

or less importance, claim some notice under this head, but our limited space admonishes us that we must pass on to a review of other leading commodities.

Hemp.—In our last annual report we stated that our information respecting the then growing crop led us to the conclusion that the supply would be much less than during the previous season, as the crop in Kentucky did not promise well, and there was likely to be a material falling off in the arrivals from Missouri, owing to the fact that a considerable portion of the receipts of last year was made up of parts of several crops which had been detained from market by low waters, &c., in previous seasons. The result shows a much larger deficiency than we anticipated, the receipts since 1st September last to this date being only 21,584 bales, against 60,238 bales last year; or a decrease of 38,654 bales. There was quite a large stock remaining over at the opening of the season, which had been detained by the high rates of freight, and thus the exports of the past year considerably exceed the receipts, being 27,240 bales. Of this quantity, all has been sent to the Northern ports, except 224 bales to London and 14 bales to Bordeaux. The great deficiency in the receipts has of course had its influence upon prices, and the first sale of good dew-rotted was in the early part of September, at \$120 per ton. This price was claimed for all the lots arriving for a period of several months, but finding no purchasers they were sent forward. Indeed very few sales have been made here this season, owing to higher limits than buyers were willing to pay, and nearly the whole receipts have been forwarded to the North on account of the Western dealers. The highest point of the market was that above noticed, and the lowest about the middle of May, when a lot of about 300 bales dew-rotted was sold at \$52 50 per ton. The comparative receipts, and average prices, for a series of years, will be shown by the following table:

	Bales.	Per ton.
1842-43.....	14,873.....	\$80 00
1843-44.....	38,062.....	\$66 00
1844-45.....	46,274.....	\$60 00
1845-46.....	30,980.....	\$60 00
1846-47.....	60,238.....	\$98 00
1847-48.....	21,584.....	\$115 00

With regard to the coming season's supply, we observe that the crops of the West are said not to promise well, particularly in Kentucky; and as the latter state does not produce enough for her bagging and rope manufactories, but draws a considerable portion of her supplies for this purpose from Missouri, there does not seem likely to be any considerable increase in the quantity to come forward for the Atlantic markets.

Coffee.—This article continues to maintain a leading position among the foreign productions that seek our market, though the business of the season has not reached an extent equal to that of last year, in the aggregate, while prices at the same time have ruled lower. The following statement shows the imports, stocks, &c.:

Estimated stock out of grocers' hands on 1st September, 1847, of all kinds.....	bags 15,000
Imports direct from Rio de Janeiro.....	239,371
Cuba, Laguayra, St. Domingo, &c.....	8,590
	—————247,961
Received coastwise for sale (estimated).....	20,000
Making a supply of.....	282,961

Against a supply of 312,042 bags last year, or a decrease of 29,081 bags. There is an increase of 34,260 bags in the receipts from Rio, as compared with last year, while from Cuba, &c., there is a decrease of 34,341 bags, and a further decrease in the estimated receipts coastwise for sale of 21,000 bags. The present stock out of grocers' hands is estimated at about 5,500 bags—viz., of Rio 5,000, and of other descriptions, 500; showing that the quantity taken for the consumption of the West and South has been 277,500 bags against 297,000 bags last year; a

decrease of 19,500 bags. This falling off cannot be attributable to an actual reduction in the consumption, which is unquestionably on the increase, but it is to be accounted for by the fact that dealers have drawn a larger portion of their supplies than usual from the Atlantic markets, besides having a considerable surplus of last year's purchases. The first direct import of the season, from Rio, was on the 2d October, being nearly two months earlier than the first cargo arrival last year. Some sales were made at $7\frac{1}{2}$ a $7\frac{1}{2}$ cents, but the market soon settled down to a range of $7\frac{1}{2}$ a $7\frac{1}{2}$ cents, according to quality, and continued so for some time. Early in Dec. the prices gave way to $6\frac{1}{2}$ a 7 cents, but about the middle of January the market rallied a little, under the supposition that the difficulty of disposing of Sterling Exchange in Rio would arrest further shipments to this country; but the advance was only temporary, the supply on the market being rather heavy. In March, the stock being much reduced, prices again recovered to $6\frac{1}{2}$ a $7\frac{1}{2}$ cents, but the outside figures were current only a short period, the highest rate for some months subsequently being 7 cents for prime. The closing rates, are for ordinary to prime Rio 6 a 6 $\frac{1}{2}$, Cuba $6\frac{1}{2}$ a 7 cents per lb. The last direct import from Rio was on the 19th July, and the supplies since then have come from the North. In another part of our columns will be found a table, showing the direct imports from Rio, Cuba, &c. for a period of three years.

COMPARATIVE RECEIPTS—NEW-YORK CANALS, AND NEW-ORLEANS FROM WEST.

	Flour, bbls.		Wheat.		Corn, bush.		
	N. York.	N. Orleans.	N. York. bush.	N. Orleans. bbls. & sks.	N. York.	N. Orleans.	
1836.....	928,116....	—	824,855....	—	1,593....	—	See our Tables.
1837.....	914,171....	—	592,037....	—	24,768....	—	
1838.....	1,079,001....	—	551,589....	—	32,049....	—	
1839.....	992,603....	434,984....	582,752....	17,280....	8,659....	—	
1840.....	1,833,959....	482,523....	1,559,859....	63,015....	119,762....	—	
1841.....	1,647,492....	496,194....	781,055....	2,621....	366,111....	—	
1842.....	1,577,555....	439,688....	928,347....	134,868....	186,016....	—	
1843.....	2,073,708....	521,175....	827,346....	118,248....	17,861....	—	
1844.....	2,222,204....	502,507....	1,262,249....	86,014....	35,803....	—	
1845.....	2,517,250....	533,312....	1,620,033....	64,759....	1,610,149....	—	
1846.....	3,063,441....	837,985....	2,950,636....	403,786....	6,053,845....	—	
1847.....	3,952,972....	1,617,675....	4,143,830....	833,649....	—	—	

	Pork, N. York. bbls.	Beef, N. York. bbls.	Butter & Lard, N. York. lbs.	Cheese, N. York. lbs.
1836.....	37,968....	23,935....	8,582,662....	14,006,972....
1837.....	37,536....	13,883....	7,042,627....	15,564,226....
1838.....	19,768....	6,985....	8,616,710....	13,821,571....
1839.....	41,988....	12,650....	8,298,400....	14,539,568....
1840.....	59,711....	29,839....	13,708,000....	18,920,000....
1841.....	115,150....	18,113....	16,157,653....	14,171,081....
1842.....	79,235....	21,437....	19,132,930....	19,004,613....
1843.....	63,777....	47,465....	24,215,700....	24,335,260....
1844.....	63,646....	50,000....	22,596,300....	26,674,500....
1845.....	45,153....	67,699....	24,890,255....	27,542,661....
1846.....	80,093....	45,600....	28,198,658....	35,560,118....
1847.....	76,179....	71,266....	27,072,000....	40,844,000....

EXPORTS—NEW-ORLEANS, YEAR ENDING 30TH JUNE, 1848.

Product of the United States.

	3d Quarter, 1847.	4th Quarter, 1847.	1st Quarter, 1848.	2d Quarter, 1848.
In American vessels to				
Foreign countries....	\$3,297,322	\$5,731,775	\$7,372,330	\$6,240,142
" Foreign " " ".....	911,323	1,163,105	5,353,774	4,273,951
" Coastwise.....	3,745,771	5,627,935	11,317,460	7,142,435
	12,954,416	12,522,815	24,048,564	17,656,528
Total 4 Quarters—Export.....	\$67,182,323			

	3d Quarter, 1847.	4th Quarter, 1847.	1st Quarter, 1848.	2d Quarter, 1848.
Tonnage Entered.				
Am. vessels for For. ports.	3,261,368	6,318,636	5,820,885	4,550,274
For. " " " " " " " " " " " "	549,545	4,394,964	8,393,384	2,919,943
Coastwise.....	7,936,368	13,870,825	16,070,354	15,408,066
Tonnage Cleared.				
Am. vessels for For. ports.	7,710,648	5,465,362	7,943,460	7,667,704
For. " " " " " " " " " " " "	1,189,162	1,572,371	6,698,983	5,408,353
Coastwise.....	7,446,559	11,110,117	17,892,705	15,996,053
Total.....tons	28,093,650	43,284,275	62,820,771	51,960,393

1847-48.....	Grand Total, Out and In Tonnage.....	tons	186,146,454
1846-47.....	Grand Total, " " " " (Excluding coastwise) "	"	84,341,400
1846-47.....	Grand Total, New-York, (" " ") "	"	161,241,300
1846-47.....	Foreign Export, New-York.....		\$49,844,368
1846-47.....	" " New-Orleans.....		41,051,633
1848.....	Grand Total Receipts at New-Orleans from the interior, chiefly by the Mississippi river.....		779,79,151
1847.....	Grand Total Receipts at the Hudson River, New-York, by all the canals. What portion of them are car- ried on the Railroad to Boston we cannot learn..		73,094,414

NEW-YORK.

The imports at New-York for three years past, from January 1st to August 31st, are as follows:—

Articles.	1848.	1847.	1846.	Articles.	1848.	1847.	1846.
Brandy, hf. pipes	5,092	7,292	3,073	Pepper, bags...	25,705	10,032	5,656
Do. qr. casks				Pimento, bags...	10,240	5,652	6,389
and bbls...	5,148	6,252	2,719	Rags, bales...	16,307	7,614	8,388
Coal, tons...	25,251	29,162	16,890	Raisins, casks...	3,956	3,759	2,065
Cocoa, bags...	4,718	5,809	3,747	Do. boxes...	154,840	57,543	67,239
Cochineal, ce				Do. drums...	190	1,184	91,90
rooms.....	485	11	448	Rice, tierces...	20,873	24,082	20,607
Coffee, bags...	302,623	329,369	257,373	Rum, puncheons	1,982	1,689	1,109
Cotton, bales...	255,139	226,717	237,727	Salt, bushels...	1,067,909	1,209,931	652,000
Duck, bales...	660	794	269	Saltpetre, bags...	19,512	11,733	6,213
Do. pieces...	6,986	1,896	554	Sugar, hhds...	58,874	70,714	59,312
E Ware, crates				Do. tierces...	1,906	481	548
and casks...	20,203	18,573	20,069	Do. bbls...	13,024	15,140	5,460
Figs, drums, &c.	26,923	92,715	11,091	Do. boxes...	80,538	113,165	55,620
Gin, pipes...	2,675	1,765	1,657	Do. bags...	83,107	13,007	32,230
Hemp, bales...	35,357	37,421	31,414	Tin, banca, &c.,			
Do. tons...	138	107	34	slabs...	35,506	18,950	16,163
Hides, bales...	673	735	605	Do. plates, bxs...	113,067	74,716	137,686
Do. No.....	744,515	575,126	116,538	Tobacco, hhds...	9,850	6,892	13,687
Iron, bar, tons...	18,603	17,422	10,746	Do. bales and			
Do. pig, tons...	38,226	23,807	11,073	ceroons...	14,453	10,555	11,270
Do. sheet, hoop,				Wines, butts &			
&c., bbls...	120,459	105,608	26,111	pipes.....	668	632	797
Indigo, cases...	1,152	844	776	Do. hhds. and			
Do. ceroons...	1,056	513	911	half pipes...	8,000	5,225	8,095
Lead, pigs...	266,523	969,986	182,542	Do. qr. casks...	27,166	13,708	25,618
Molasses, hhds...	65,731	65,111	60,374	Do. bbls...	3,197	1,581	70,717
Do. tierces...	6,027	5,218	4,670	Do. boxes...	19,025	14,956	9,763
Do. bbls...	31,598	15,092	18,330	Wool, bales...	9,192	5,883	12,429
Olive Oil, casks	225	621	93	[New-York Shipping List.			
Do. boxes							
and bakts...	33,732	19,291	7,356				

STATISTICS OF LOUISIANA SUGAR.

We have made up some statistics from the tables of Mr. Champomier, which were published for several years, but are now discontinued. This gentleman collected his facts by correspondence and personal attendance, and though he may have been led into many errors, they are altogether too unimportant to affect the general results. Nothing so reliable can be had from any other source. We have several times attempted to continue Mr. Champomier's plan, and may yet do so, though we understand Mr. Burke, of the Patent Office, contemplates something of the same kind.

LOUISIANA SUGAR STATISTICS.

Parishes.	Sugar Houses, No.		Product, hhd.		Average product Sugar House.		Planters, No.
	1844-5.	1845-6.	1844-5.	1845-6.	1844-5.	1845-6.	
Pointe Coupee.....	5	40	888	1,206	173	300	51
West Baton Rouge.....	19	52	4,247	4,961	230	95	78
East Baton Rouge.....	18	35	4,474	4,222	240	120	54
Iberville.....	69	116	16,463	15,624	230	134	194
Ascension.....	48	63	19,223	16,906	400	264	96
St. James.....	67	81	21,519	17,515	310	216	197
St. John.....	55	61	13,575	9,909	230	165	145
St. Charles.....	37	39	12,532	10,650	320	273	94
Jefferson.....	24	29	11,218	7,541	460	260	49
St. Bernard & Orleans.....	23	26	6,941	5,670	260	210	47
Plaquemines.....	36	45	14,761	11,321	400	251	77
Assumption.....	62	137	11,990	12,076	175	88	206
Lafourche.....	49	98	14,205	11,116	280	113	164
Terrebonne.....	42	78	12,661	12,080	290	164	104
St. Mary.....	147	179	18,795	24,722	120	132	283
St. Martin.....	36	69	4,419	5,246	120	76	115
Lafayette.....	4	7	372	365	90	52	11
Vermillion.....	13	19	862	1,176	65	61	33
St. Landry.....	8	26	1,179	1,352	130	52	37
Red River Parishes of Avoyelles, Rapides Catahoula, Concordia }	.....	27	.....	.....	.....	.....	29
Calcasieu.....	.....	11	.....	119	.....	10	11
West Feliciana.....	.....	2	.....	.....	.....	.....	4
Cistern Sugar.....	.....	.....	.....	9,876	.....	.....	.....
Total.....	764	1,240	191,324	186,650	250	150	2,077

PRODUCT SUGAR HOUSES.

		1845.	1846.
Producing 1000 hogsheads and over.....		8	—
“ 900 “ “		3	2
“ 800 “ “		8	1
“ 700 “ “		20	4
“ 600 “ “		20	18
“ 500 “ “		43	20
“ 400 “ “		45	46
“ 300 “ “		99	98
“ 200 “ “		104	154
“ under 200 “ “		407	897

PLANTERS PRODUCING OVER 1000 HOGSHEADS.*

H. McCall.....	1019	Garcia & Co.....	1015
D. F. Kenner.....	1155	L. Labranche.....	1016
Brengiers.....	1170	L. Millandon, (3 estates).....	2035
Valcum Aime.....	1152	Preston, (2 estates).....	2324
Henry Doyle.....	1539		

* For every hogshead of sugar one barrel of molasses is produced.

Thus nine planters produced as much as the 81 planters of St. Martins, Lafayette, St. Landry, Vermillion and West Baton Rouge, and one-sixteenth of the whole crop.

About 160 planters produced one-half of the whole crop.

It is to be observed, however, that many planters have interests in other estates than their own, and others have estates in different parishes. Several have often an interest in the same estate.

Adding the cistern bottom sugars, used by the refiners, the crop of 1844-5 exceeded 200,000 hogsheads. The number of steam sugar mills that year was 408, the rest being horse. Whole number of planters then, 900.

The estimate of 1845-6 includes the cistern bottoms. Mr. Champomier estimated there would be in operation in 1847, from returns made to him, 1240 sugar houses, owned by 2077 proprietors. They appear in our table of 1846 *as in progress*; 204 expecting to work in '46 and '47, and 81 in '47 '48. From the stimulant given to the sugar culture by the high prices of 1847, and the very low rates of cotton in 1848, the new bayou and river lands taken into cultivation, and especially the region on the Red River, the whole number of sugar mills in Louisiana in 1849-50, will scarcely fall short of 1,500. About one-half of the mills are by horse power, though steam is being rapidly substituted.

If we consider the whole territory of Louisiana, and compare the country south of Rapides Parish, excluding the Florida parishes, we shall find about one-half of the state adapted to the sugar culture. Probably not one-twentieth is now cultivated in sugar. There are many parishes in which it is not planted at all. 120,000 out of 200,000 hogsheads, which the state produces, are made by the parishes on the river above and below the city. The crops of Red River parishes, the present year, we have not learned; but from 30 houses may estimate 7,000 hogsheads, perhaps 10,000.

NEW ORLEANS MECHANICS.

SIR:

As the object of your Review is to foster the talent and resources of the South-West, you will permit me to direct your attention to a paragraph, (copied from the Baltimore Sun,) which has gone the round of the city press without comment. It states that a new Dredging Machine, manufactured PER ORDER of the Second Municipality, has just been completed, etc., etc.

Could not this machinery have been made in this city or state? I will answer this question by stating, that there are within the bounds of the Second Municipality, no less than *four* shops, capable of making this machinery, and I think that it was in bad taste, and also impolitic, for the aldermen to send for it to Baltimore, or any other place, thereby intimating that our mechanics were not competent to make such *ordinary machinery* as that used in dredging operations, when it is well-known that machinery, requiring the greatest accuracy and finish, is made in this city.

The Board of Aldermen must know that the past season has been a dull one, particularly to those engaged in making machinery, and how much better would it have been for the money expended on this dredging machine to have been kept in this city, giving employment to our own workshops, and thereby indirectly replenishing the treasury from whence the money emanated. Being a resident of the city, and feeling some pride in its credit, I could not let this matter pass in silence, as I have frequently censured individuals for getting work done abroad at the expense of those persons among whom they obtain their own livelihood.*

Respectfully, yours,
A MECHANIC.

* We are willing that a mechanic should be heard, though his complaints against the liberal public spirit of the Second Municipality is hardly deserved. We know their disposition to sustain native arts and manufactures.—[EDITOR.]

EDITOR'S ARM-CHAIR.

Since our last issue we have received—

1. Nos. 25, 26, 27, *Chambers' Miscellany*, which requires three more numbers to be completed. This is one of the most popular, useful, and interesting productions of the age, and as such should commend itself to the widest circulation. One of the numbers before us contains the *Life of a Negro Slave*, in which it is intended to hold up the "horrors" of negro slavery in our Southern States. The picture, as usual, is false; though we will not allow the work on that account to be prejudiced in our mind. Boston: Gould, Kendall & Lincoln. New-Orleans: J. C. Morgan.

2. *Blackwood's Magazine* for September. We received from the publishers, through J. C. Morgan, agent for New-Orleans, the last issue of Blackwood. The contents are as usual sprightly and instructive. The low price at which this work is published, should bring it within reach of all.

3. *Southern Quarterly Review*: Charleston, S. C.
North American Review: Boston, Mass.

These works come to us in about the same size and same appearance, but represent the tones, feelings, and sentiments of sections far remote, and in many respects, antagonistic. It would be invidious to characterize either as the most able, though our prejudices are naturally in favor of the Southern work. Contents, *North American*: "Williams' China;" "Campbell and Stevens' Virginia and Georgia;" "Life of Tyndale;" "Novels of the Season;" "Mills' Political Economy;" "Lord Sidmouth;" "Protestantism in France;" "Prose Writers of Germany;" "Scottish Peasants, &c." Contents, *Southern Quarterly*: "Progress Political Economy;" "South Carolina in the Revolution;" "Carlyle's Works;" "Fugitive Poetry of America;" "Danger and Safety of the Republic;" "Religious Instruction of Slaves;" "Army in Texas;" "The French Republic;" "Marlborough," &c.

4. *Southern Literary Messenger*, Richmond, Va.; *Western Journal*, St. Louis; *Plough, Loom and Anvil*, Philadelphia; *Banker's Magazine*, Baltimore. These four monthly periodicals are regularly upon our table. The "Messenger" is always attractive for its literary contents. Mr. Skinner is giving a wide popularity to his "Plough, &c.," and the present number richly deserves that favor. The "Western Journal" contains six original articles, and is printed in handsome style. Contents "Banker's Magazine," October, 1848:—

1. Transfers of Bank Stocks.
2. United States' Stocks.
3. Bank Virginia. 4. Bank of Albany.
5. Bank Statistics. 7. Bank Items.
6. Commercial Crises of 1847 in Britain.
8. Exchanges, &c., &c., &c.

Complete bound sets of this work may be obtained from the Publisher, which are very desirable.

Emory's New Mexico and California, printed by order of Congress. Abert's *Report on New Mexico*, by authority of Congress. These two works are in hand for elaborate review in our next numbers. We are indebted to the kindness of Lieut. Abert and Hon. Henry Johnson for copies.

UNIVERSITY OF LOUISIANA,—NEW-ORLEANS.

Administrators :

Ex-Officio. { HONORABLE ISAAC JOHNSON, Governor of the State of Louisiana.
" " GEORGE EUSTIS, Chief Justice Supreme Court.
" " A. D. CROSSMAN, Mayor of the City of New-Orleans.

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FRANCIS L. HAWKES, D. D., President.

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JAMES JONES, M. D., Professor of the Theory and Practice of Medicine.
WARREN STONE, M. D., Professor of Surgery.
J. L. RIDDELL, M. D., Professor of Chemistry.
A. H. CENAS, M. D., Professor of Obstetrics and of the Diseases of Women and Children.
G. A. NOTT, M. D., Professor of Materia Medica and Therapeutics.
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HON. THEODORE H. McCALEB, Professor of Admiralty and Maritime Law.
RANDAL HUNT, Esq., Professor of Commercial and Criminal Law.
HON. THOMAS B. MONROE, Professor of the Common Law, Constitutional Law, &c.

DEPARTMENT OF POLITICAL ECONOMY, COMMERCE, &c.:

J. D. B. DE BOW, M. A., Professor.

MEDICAL DEPARTMENT :

The Lectures in this College, lately concluded by the graduation of a large class, will commence on the 20th of November, in the capacious edifice on Common-street, which the builders are now rapidly finishing. Having adopted and maintained a high standard of medical education, the professors, from their connection with the City Hospital, enjoy superior advantages for practical instruction in clinical Medicine, Surgery, and Midwifery. There is a fine amphitheatre in the Charity Hospital, for surgical operations and lectures. Opportunities for the pursuit of practical anatomy are unequalled—subjects being supplied gratuitously in any number. For further information, persons will please address the Dean for the printed circulars and catalogue. For the correction of false statements it is proper to mention that the expenses of boarding, &c., in this city are much reduced, that the epidemic yellow fever never prevails after the first week in November, and that hereafter contagious diseases will not be promiscuously admitted into the medical wards of the Hospital.

JAMES JONES, M. D., Dean.

LAW DEPARTMENT :

The Lectures and instruction in this department will commence on the second Monday of November next, and continue until the 1st of May.

Those by Professor BULLARD will embrace History of Roman Law, Analysis of the general principles of Roman Law, on the approved method of the German School; Jurisprudence of Louisiana, compared with Roman Law, and French and Spanish Codes; outline of Land Titles in Louisiana, derived from Spain, France, and United States.

Those by Professor McCaleb will embrace Admiralty and Maritime Law, International Law, including Law of Prize, rights of Peace and War, Treaties, etc.; Jurisdiction United States Courts, Supreme, Circuit, District, Instance, and Prize Courts, &c.

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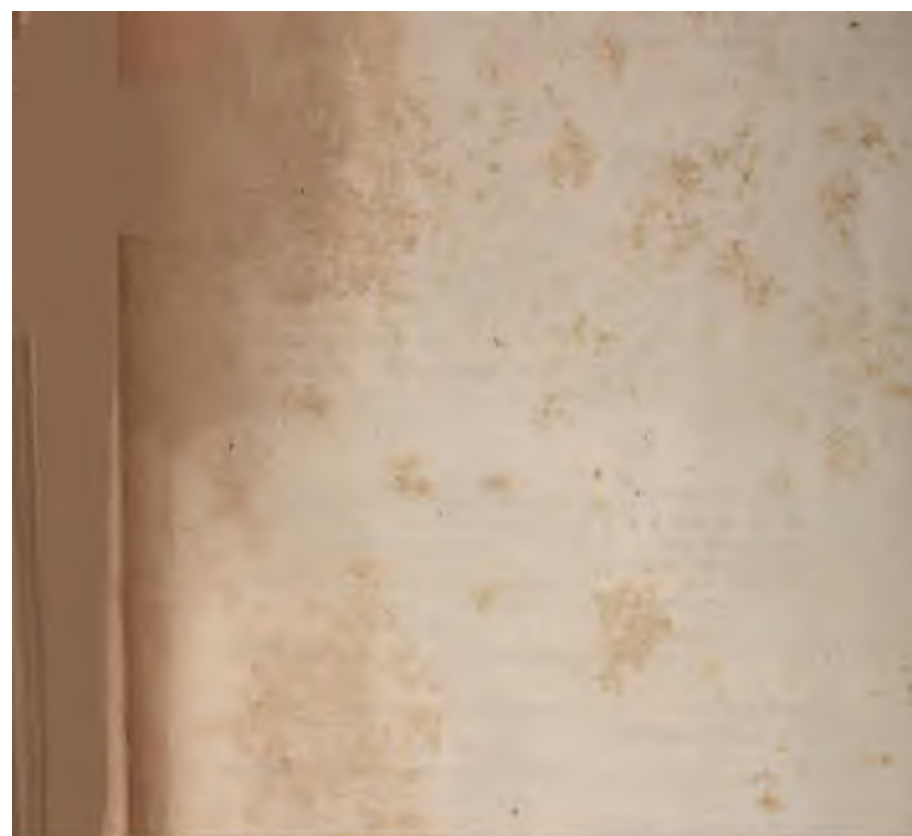
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